ENGINEERING NEWS-RECORD

Special Report: Dambuilding in Italy p.30

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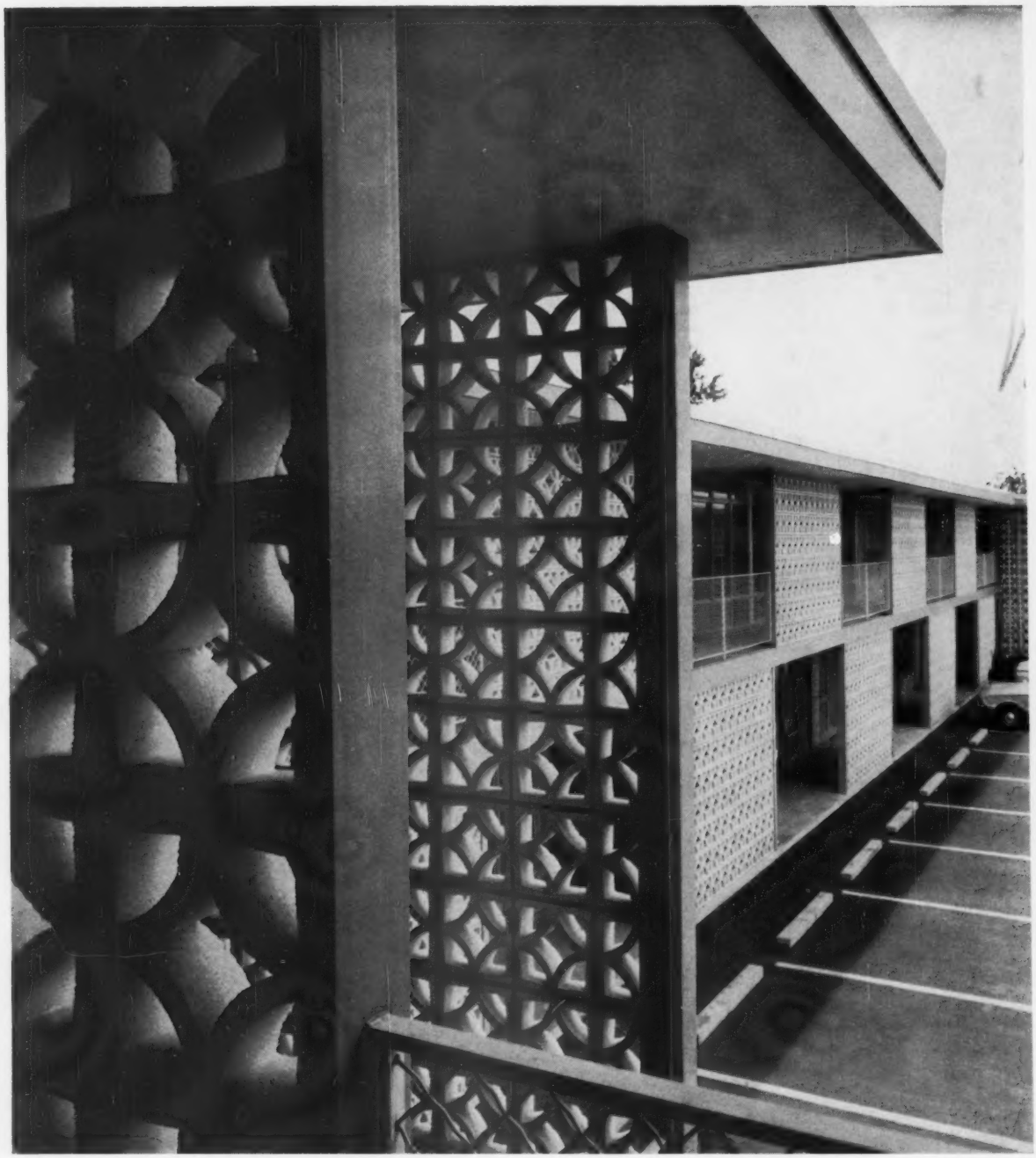

Inside and out, it's concrete

In designing the Towne House Motel, Hickory, N. C., the architect wanted materials that would reduce work indoors and "stop traffic" outdoors. His choice? Concrete... in masonry walls, poured-in-place floors, concrete block curtain walls, and in other forms. Penn-Dixie cement was one of the ingredients used in this striking example of concrete's versatility.

Architect: J. Hyatt Hammond & Associates, Asheboro • General Contractor: Guy Frye & Sons, Hickory • Ready Mixed Supplier: Hickory Ready Mixed Concrete Co.
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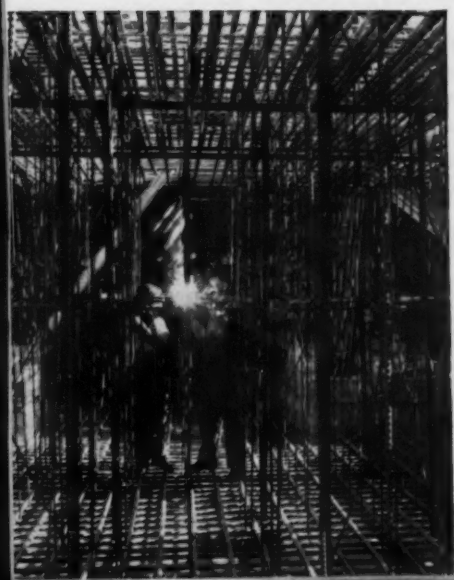

A 600-ft "Space Needle," topped with a revolving restaurant, will be the symbol of Seattle's Century 21 exposition, scheduled to open early in 1962.

The tower required a massive Y-shaped foundation containing 250 tons of Bethlehem steel reinforcing bars. Placement of the steel bars in the 30-ft deep excavation was a tricky job. 2,800 cu yd of concrete were placed in 12 hours.

All Bethlehem bars have a pedigree

Certified mill test reports, furnished by Bethlehem, are matched with heat numbers by which the bundles of bars are identified. When you buy Bethlehem bars you are assured of composition and mechanical and physical properties that meet all ASTM Billet-Steel Bar Specifications—a certified pedigree.

Architect for the $3 million Century 21 Space Needle is John Graham and Company; general contractor: Howard S. Wright Constructors, Inc.; steel fabricator and erector: Pacific Car & Foundry Co.

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EIGHTY-SEVENTH YEAR OF PUBLICATION

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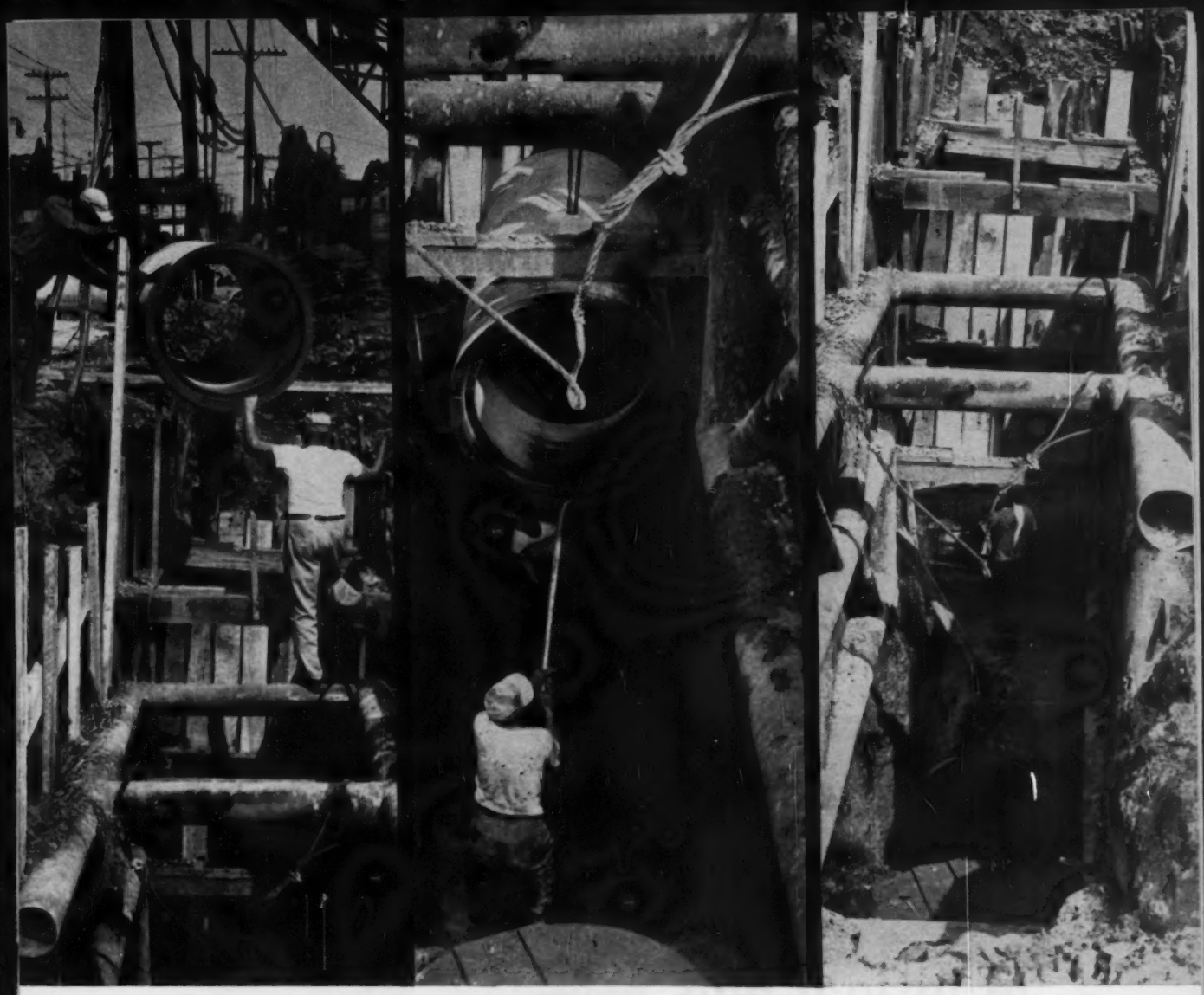

PROJECT: Poland Ave. Interceptor (Section 2), Youngstown, Ohio. OWNER: City of Youngstown, Ohio, Frank R. Franko, Mayor; Philip Richley, City Engineer. CONSULTING ENGINEER: Havens & Emerson, New York City and Cleveland, Ohio. CONTRACTOR: Shullo Construction Co., Akron, Ohio. PIPE: 36" Reinforced Concrete Pipe, coated, with O-Ring Joints.

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Strong, durable U. S. Reinforced Concrete Pipe is designed and manufactured to provide a *permanent* waste disposal system. Custom concrete blends, select steel reinforcement and U. S. Concrete Pipe Company manufacturing know-how guarantees generations of virtually maintenance-free service.

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300-ft. concrete dome (reported to be the largest of its type anywhere) is the dominant feature of this new auditorium in Anderson, Ind., for the General Ministerial Assembly of the Church of God. Dome was cast at ground level, contoured over a mound of earth. It was then post-tensioned with twelve 40-wire assemblies supplied by Ryerson—and finally lifted into place by the Youtz-Slick method. Dimensions: 250 ft. clear span, with 25-ft. cantilevers for a total span of 300 ft.; vertex of dome 68 ft. above floor level. **Architect:** Johnson, Ritchhart & Associates, Anderson. **General contractor:** Lewis Construction Co., Anderson. **Lifting:** Great Lakes Lift-Slab, Chicago; Sky Hook Lift-Slab, Overland Park, Kansas.

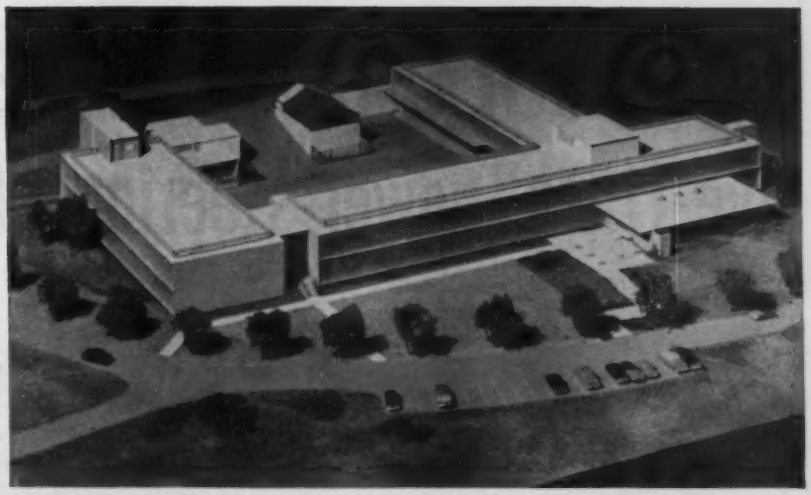
How Ryerson post-tensioning service makes prestressing more versatile, practical and reliable

First post-tensioned apartment building in Chicago area. Thinner slabs, more flexible arrangement of apartments and additional parking area were made possible by use of post-tensioning in the new Grove St. apartment building in Oak Park, Ill. Use of post-tensioning in this structure brought an award for the architect from the Society of American Registered Architects at their 1961 convention. **Builder:** James E. Tatooles. **Architect:** Chester A. Stark, F. A. R. A. **Structural consultant:** T. Y. Lin & Associates. **Concrete contractor:** Lundsberg Company. All are of Chicago.

new design flexibility

Here are four new buildings—each quite different in design. Yet they all have one important thing in common. They're built of prestressed concrete—post-tensioned by Ryerson.

Using the time-proved BBRV system, Ryerson post-tensioning service provided new design freedom and flexibility permitting wider column spacing and lighter, virtually deflection-free slabs.



New Nuclear Medicine Building uses post-tensioned lift-slabs. This striking new addition to the campus of a California university is built with continuous, two-way flat slabs 9 in. thick containing a total of 838 Ryerson (BBRV) tendon assemblies—most of them 14-wire units. Column spacing is approximately 25 ft. **Architects and engineers:** Neptune and Thomas and Associates, Pasadena. **General contractor:** James I. Barnes Construction Co., Santa Monica. **Lifting contractor:** Vagtborg Lift-Slab Corp., Los Angeles.

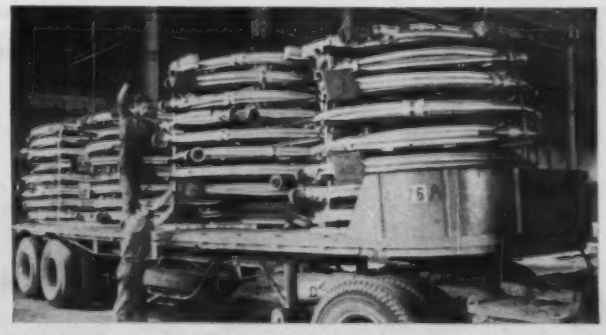
Ryerson service covers every operation

This unique Ryerson service covers prestressed concrete application from adaption of the engineers' design through final stages of field erection. It includes force development calculations, quality-controlled tendon and anchorage assembly, equipment for precise stressing (and positive grouting where conduit is used), job-site technical assistance and dependably scheduled deliveries. And the entire service is all wrapped up in a complete, single-price package.

For further information on post-tensioning and other products and services for the construction industry, contact your nearby Ryerson plant.

Library Building University of Nevada, Reno—a State of Nevada Planning Board project—is built with 22'6" column spacing, 9" lift-slabs and 4" folded plate roof structure, spanning 90', and cantilevering 27'. Slabs and roof were post-tensioned. **Architects:** Robert E. Alexander, F.A.I.A. & Associates, and Vhay Associates, Los Angeles and Reno. **Structural engineer:** Parker, Zehnder & Associates, Los Angeles. **Consultant for roof structure:** John J. Driskell. **General contractor:** Stolte, Inc., Oakland, California.

Ryerson Post-Tensioning Assemblies and reinforcing steel in place—ready for pouring of concrete to form precast I-Beam.



Completely assembled tendons—are shipped from Ryerson on specially designed racks ready for easy uncoiling and installation.

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To make a turn, you simply change the speed of a TD-25 track with "live track" Planet Power-steering. This way, you keep full power and traction on both tracks to assure full-load turning. Load-limiting "dead-track drag" doesn't sabotage your bids.

To handle big offset loads, or to counteract the side draft of benching without sluing or "bank-nosing," simply shift the TD-25's load-side track to high range; leave the other track in low. You stay on course, deliver full loads or make full cuts, full time.

To keep full loads on the move, full time, through tough or easy going, use instant-acting, on-the-go Hi-Lo, power-shifting. Cut-to-fill matching of power to condition goes far to prevent payload spillage. Fast, easy TD-25 power-shifting is a built-in bonus of Planet Power-steering!

For constant-contact push-loading, apply full TD-25 power with planetary track control, get full speed and production without scraper-mauling impact. Prevent push-block banging damage.

Prove to yourself how turning affects earning. See how TD-25 advantages let you grab jobs from "break-even" bidders and still make profits. Let your International Construction Equipment Distributor demonstrate!

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"On course" steering with offset loads means full-capacity production even in rock-laden material. To prevent needless zig-zagging and loss of momentum, a "25" operator simply changes the speed of one track to put extra power leverage where needed to meet changing conditions. These two machines, pioneering a 107-foot deep cut, are members of a fleet of seven International TD-25's on a Kentucky Turnpike job in rocky, hilly terrain.

Pushes of over 600 feet pay off for this New Mexico contractor—producing sub-base gravel for a North Albuquerque highway. Instant speed control of either or both tracks with the planetary transmission means positive load-control—to heap "ripped" gravel and "run" to the crusher hopper. Then the "25's" high reverse of 7.5 mph means fast back-up for the next push. What would have been a costly 2-tractor operation is efficiently done *with one TD-25!*

PROFIT with power shifting!

Steady full-power traction on both tracks full time assures ample push to beat the grade and handle big loads of tractor-ripped bentonite at an Arizona mine. This TD-25 keeps busy removing overburden, ripping and stockpiling the ore. Only the "25" gives you the power-wallop of the free-breathing, dual-valved DT-817 diesel—with 230 turbocharged hp. Push-button direct starting saves operating time—operator effort!

Planetary track speed control lets you turn heavy offset loads or push straight ahead with them—without profit-robbing spillage or time waste. See how this planet-drive "25" beats king-sized clutch-steered crawler capacity with 2-finger ease—overcoming the sidedraft of bulldozing random-dumped dirt and boulders on a Virginia road job. And right where clutch-steered king-sized crawlers waste power and momentum, TD-25's can heap-load scrapers in record time!

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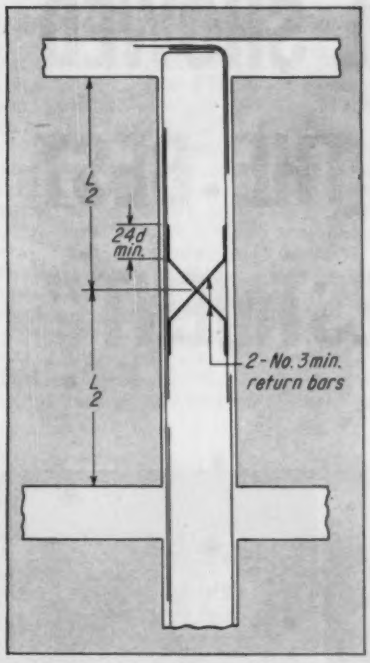

Resilience in Tall Frames

SIR—Your article on Earthquaqe Resistance in Tall Concrete Buildings (ENR Oct. 5, p. 36) was informative and interesting. The emphasis on ductility, with its relationship to the overall design of both materials, deserves due consideration where dynamic forces are applied.

In addition to ductility, another desirable feature would be resiliency. Lateral forces create hinge or inflection points at about the midpoint of column height and beam or girder spans. Where reversals are highly probable, the use of so-called "return bars" (see sketch) would be very effective. These additional bars need only assume the lateral seismic shears at the respective levels.

SIMON W. LEWAREN
Highland Park, Ill.

The Origin of Tiebacks

SIR—Somewhat belatedly we refer to your editorial A Better 'Ole in which you extol a "new" system of prestressed tiebacks (ENR June 8, p. 80).
(*Reader comment continued* p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N.Y.

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These revolutionary joints are now available on lifetime Vitrified Clay Pipe all over the country on sizes from 4 inches to 36 inches, in some areas, up to 42 inches. They are built to exceed rigid ASTM and other applicable standards.

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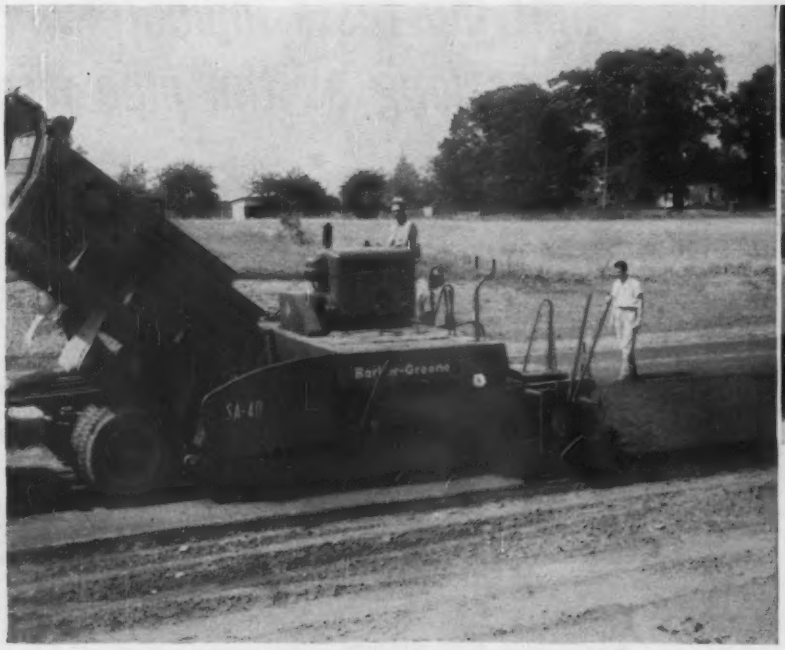

SA-40 REPORT. Fast paving speed and ease of operation highlight foreman Bill White's comments on this new SA-40. White reports initial black base course (4" lift, 12' wide) was easily handled at 2000 tons per day.

MODEL 828 SELF-ERECTING STABILIZATION PLANT is one of four models in Barber-Greene line producing 200 to over 600 tph at lowest cost.

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Sherman Simpson, veteran Mt. Airy, N. C., contractor, tackles first asphalt paving jobs with 894 BatchOmatic and SA-40 Finisher after checkup on competitive equipment

Contractor Sherman Simpson, Mt. Airy, N. C., tells why he bought a Barber-Greene paving equipment package when he recently branched out into the asphalt paving field:

"In my 32 years association with contractors, the name Barber-Greene seemed to stand out among asphalt paving equipment manufacturers – but I wanted to be doubly sure. So, I polled some good contractors. Barber-Greene and two other makes were most recommended. I went further and checked owners of this type equipment and found Barber-Greene way out front. That's when I ordered my Barber-Greene 894 BatchOmatic plant and SA-40 asphalt finisher."

"I got another winner, too, in the distributor—Carolina Equipment Co. Past experience with them makes their people tops on my list," he adds.

When you need an asphalt paving equipment package, or just an asphalt finisher or stabilization plant, take your own contractor preference poll.

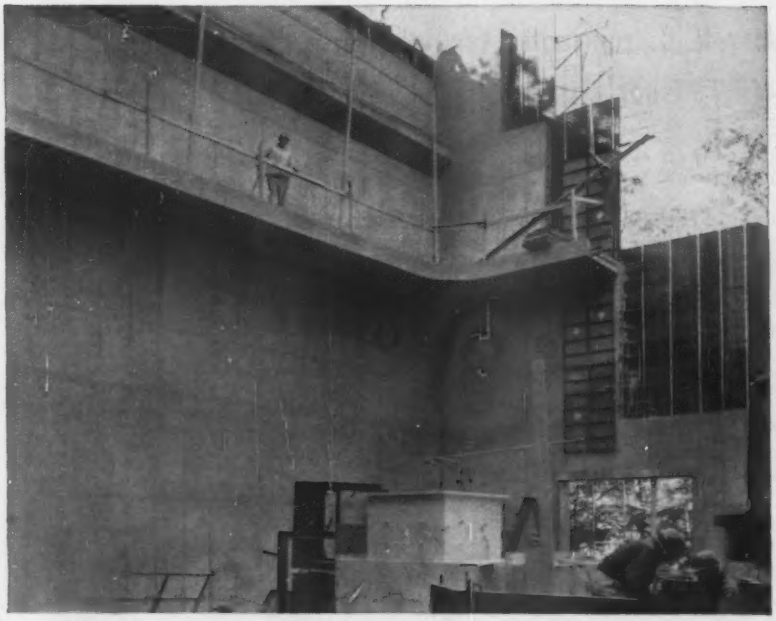
You'll get further proof why modern Barber-Greene BatchOmatic and Continuous asphalt plants are industry leaders for lower cost high capacity production, most accurate and automatic operation, lower maintenance, and the ultimate in portability when required.

You'll discover Barber-Greene finishers—the General Duty SA-40 and 879-B, the Heavy-Duty SA-60 and SB-60 models, and the Compact 873 have one common feature: lowest cost paving per ton.

You'll find all sizes of Barber-Greene stabilization plants preferred for high capacity, controlled mixing with minimum maintenance.

33% PRODUCTION BONUS. Simpson's 894 BatchOmatic is shown mixing HB black base for road resurfacing job at China Grove, N. C. Plant Foreman, J. D. Young reports: "The 894 is rated at 1,500 tons daily, but we are mixing up to 2,070 tons of black base in 12 hours, and that included two hours of waiting for trucks." Plant is equipped with DA:65-CA:65 dryer-pac, four-bin cold feeder and a Model PA-70 conveyor. Contractor Simpson says, "We'll set this plant up on permanent location soon. Then, I'll need another plant and you can bet it will be a Barber-Greene." Closeup of automatic controls are shown at upper left.

Prefabs form cut-up job . . .



Catwalks, haunches poured together with Symons steel-ply forms

One of the best case studies of prefab form versatility in action was that of the atomic reactor facility for Cornell University at Ithaca, N.Y. On one phase of the project, the contractor, Rouse Construction Company, Gouverneur, N.Y. used Symons Steel-Ply Forms to pour monolithically the walk around the reactor, the catwalk and the haunch above it. Pours averaged about 16 feet high.

Symons Forms also showed their adaptability when forming was done around the complicated reactor machinery. It was imperative here that no ties be used in pouring the first six feet of the wall. To solve the problem, Symons Forms were simply attached together and the machinery itself acted as bracing. Some of the walls were as high as 45 feet when completed.

For complete information on Symons Steel-Ply Forms, write us. Ask also about our free engineering service . . . rental purchase options . . . and complete-line catalog.

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. . . Reader Comment

Inasmuch as your reporter states that the "originators" of the system have applied for a patent, you, and the "originators" will be interested to know that a similar technique was developed and applied by this Company in June 1959 at a crowded building site in Port Elizabeth, a coastal town in the Republic of South Africa. There we installed some thirty 75 ton cables to act as an anchorage for a deep basement retaining wall.

Whilst we did not seek a patent on this new development, we did take pride in overcoming the problem on hand and thus add to our armoury of techniques and "know how" which are the pre-requisites of any foundation engineering contractor.

W. S. GARRETT, Managing Director
The Cementation Co. (Africa), Ltd.
Johannesburg
Union of South Africa

Win-Place Controversy

SIR—In your June 8, 1961, issue you editorially credit Spencer, White & Prentis, Inc. of New York City for the development and initial use of a "Pre-test Tieback system."

While it is good to see such a system incorporated in foundation construction for buildings, this is not the first time this system has been used. It was initially used by the writer to tieback the cofferdam for the North End of the New River Tunnel in Ft. Lauderdale, Fla. during 1959 and 1960. This tieback system was just one of the innovations incorporated in the construction of the New River Tunnel.

J. E. HOOD
Harada Corp.
San Juan, Puerto Rico

Extra Light Concrete?

SIR—Your attention is called to an obvious typographical error in the article Copter Totes Concrete up Canyon (ENR Sept. 14, p. 42). The weight of 5 cu yd of concrete is given as 750 lb.

Five cubic yards of normal concrete would weigh about 10 tons, but 5 cu ft of normal concrete weighs about 750 lb.

E. F. YOUNG
Universal Atlas Cement Division
United States Steel Corp.
Minneapolis, Minn.

SIR—This *really* must have been *light*-weight concrete.

LAURENCE J. PHILLIPS
Belmont, Mass.

For Your Calendar . . .

American Institute of Steel Construction, annual meeting, Boca Raton Hotel & Club, Boca Raton, Fla., Nov. 27-30. Write: AISC, 101 Park Ave., New York 17, N. Y.

Exposition of Chemical Industries, New York Coliseum, New York, N. Y., Nov. 27-Dec. 1.

Building Research Institute, fall conference, Mayflower Hotel, Washington, D. C., Nov. 28-30. Write: BRI, 2101 Constitution Ave., Washington 25, D. C.

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USS United States Steel

see next two pages

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Scrapers

resistance–more durability into construction equipment

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Tractors

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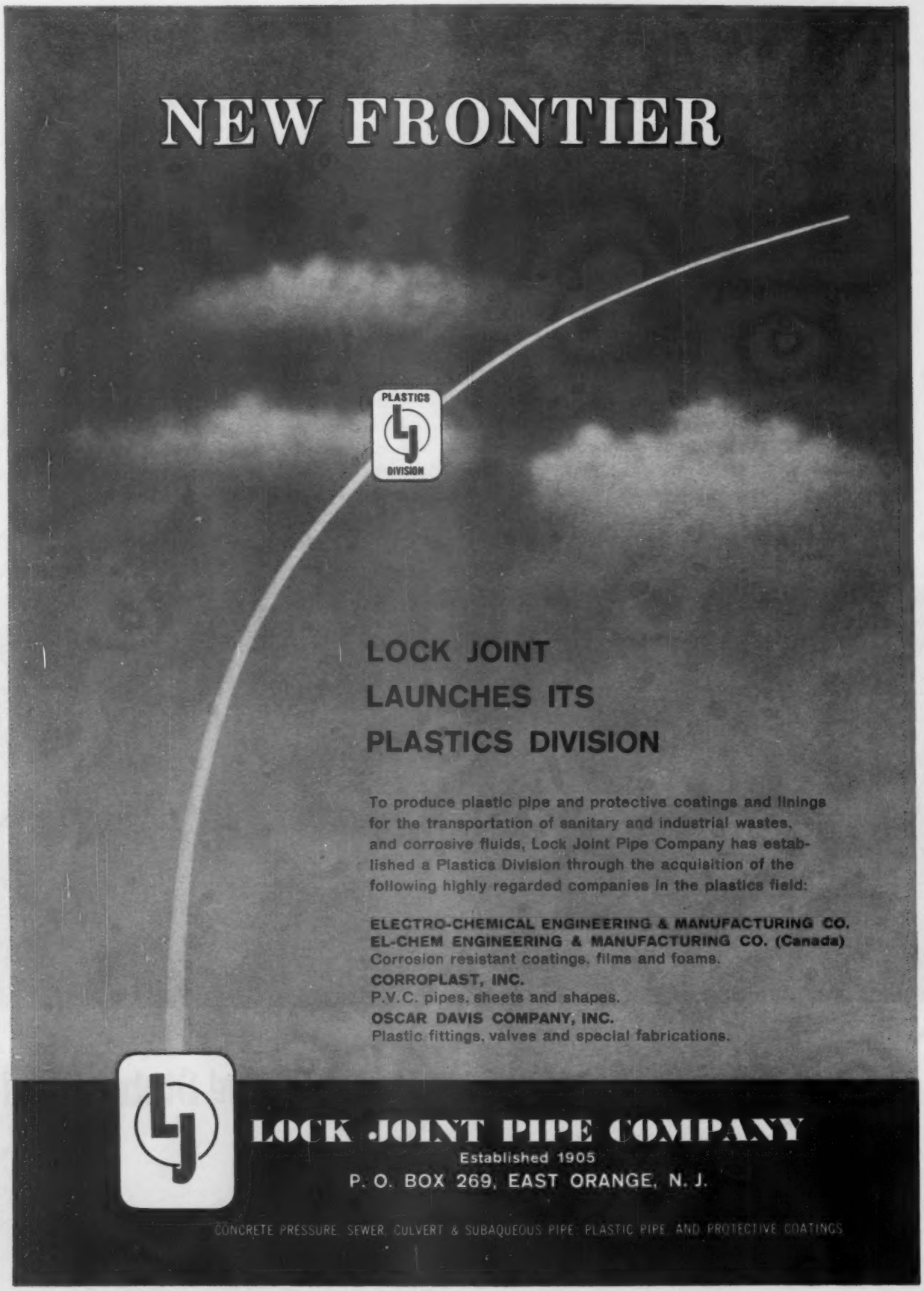
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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

STEAM PROBE RUNS OUT OF SAME—Hawaii Thermal Co. has given up efforts to find steam for electric power generation under the slopes of Kilauea Volcano. After drilling five holes with no success, the firm is now moving its equipment to California.

NASA PLANS PADS ON THE PEARL—The National Aviation and Space Administration has selected a site on the Pearl River in southern Mississippi for a "static test facility" for the Saturn rocket. Construction will begin next spring on a $40-million project that will include at least six concrete pads designed to withstand thrusts of 1½ million to 30 million lb.

FAST, NOISELESS PILE DRIVING—Reporters invited to a press party in Providence, R. I., last week were shown a pile driver that deals out energy by vibration instead of impact. It performed impressively in driving steel pipe piles into sandy soil—with almost no noise and tremendously faster than a conventional steam hammer that was also used in the demonstration. The pros and cons of this so-called sonic pile driver will be presented in next week's issue.

BUILDING WITH CASH—Kentucky last week rejected requests by state agencies for starts on $44 million worth of public construction and declared that for the next two years only projects financed by revenue bonds will go to construction. The two-year moratorium on new capital projects is the result of income failing to meet estimates.

BUILDING RESEARCH GOES SOLO—The Building Research Institute will end a 12-year affiliation with the Division of Engineering and Industrial Research of the National Academy of Sciences-National Research Council in 1963. The separation will enable BRI to expand building research activities and accept grants. Organization of BRI will be unchanged.

BACK TO SCHOOL—Two contractors have won their case for reinstatement as eligible bidders on New York City school work. The Board of Education during an investigation into city school construction, barred Caristo Construction Corp. and Mars Associates & Normel Construction Corp. from bidding (ENR June 29, p. 17). A New York Supreme Court judge, ordering reinstatement of the contractors, said they had been "undeservedly vilified."

NEVER THE DRAIN SHALL MEET—Cities on the eastern slope of the Continental Divide have a right to get water from the western slope, according to a Colorado Supreme Court ruling. The decision sparked two projects, with a total value of $57 million, to divert water from Eagle River tributaries to Denver, Colorado Springs and Aurora.

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WASHINGTON OBSERVER

- **Family fallout shelters draw mixed reaction**
- **Cabinet publicizes urban construction work**
- **Highways aren't happy ways in Washington**

- **The Kennedy Administration is sharply divided over the question of how hard to push the family fallout shelter program.** Civil defense officials are pressing President Kennedy to advise all Americans to build shelters. Other White House advisers caution a slow approach for fear of creating panic, a war psychology or a defeatist attitude. Economic planners would rather see family savings invested in hard goods to spur factory production.

  Obviously, Mr. Kennedy has not yet made up his mind on the issue. He may do so, however, by the end of this month when the Defense Department's Office of Civil Defense finishes its new booklet on the dangers of fallout. It will include a design on how to build a basic shelter—chiefly a house-basement affair using plywood and sandbags instead of concrete—for less than $150. Also under consideration is a tax concession for private shelter construction. But the White House is cool to this; efforts to balance the fiscal 1963 budget will be difficult enough without new concessions.

—

- **School construction, public housing, urban renewal, transit and other urban problems get a push from the Kennedy Administration this month.** Cabinet members and other top officials stage a series of meetings around the country November 7-21 to drum up support for the President's domestic programs, many of which involve construction. Housing Administrator Robert C. Weaver makes more appearances than any other official—November 7 in Chicago, November 15 in Cleveland and November 16 in Philadelphia.

—

- **The Administration may ask Congress to consider imposing user charges on barge lines.** This recommendation, submitted by the Commerce Department to the White House this week, would be an attempt to recoup some of the federal investment in the development of inland waterways. This is the theory behind Commerce's reasoning:

  Congress this year increased taxes on truckers to help pay for new highways. President Kennedy has asked for similar charges on airlines but Congress has not yet acted on this. Commerce urged that Congress project this another step and consider whether user charges should be assessed against barge lines. Barge operators have warned that such action would lead to higher freight rates.

—

- **Whether to complete a $300-million inner-loop highway system has become an issue in a freeway-rapid transit battle in the capital.** The National Capital Planning Commission has raised the possibility that it will oppose sections of the system, which is part of a freeway system designed to speed traffic within and around the city. The Commission, a key advisory group to the District of Columbia Highway Department and to Congress, will reach a decision November 9. New opposition to the inner-loop projects has come from the city's Fine Arts Commission and from the Committee on the National Capital of the American Institute of Architects. Both argue that the proposed freeways damage the character of the capital. Some influential congressmen feel the same way.

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AGC Moves Against Corruption

- **Governing Board unanimously approves move to investigate AGC members found guilty of corrupt construction practices.**
- **Ethics Committee has power to begin investigation of a member on complaint of Governing Board, a chapter or other member.**
- **Board blames highway departments' "drastic changes in engineering practices and procedures" for increasing highway costs.**

The Associated General Contractors acted this week to purge the organization of all members guilty of corrupt trade practices.

At its five-day, mid-year Governing Board meeting in New Orleans, the AGC granted investigative powers to its standing Committee on Ethics and Trade Practices.

The Committee will now be empowered to:

- Initiate its own investigation whenever an AGC member pleads guilty or is found guilty of corrupt construction practices.
- Investigate corrupt practices upon complaint by the AGC board, an AGC member or chapter.

The action answered an opening day plea to the Board sessions by past president William Klinger of Sioux City, Iowa. Mr. Klinger cited five major scandals that have rocked the construction industry this year, including rigged bids and graft in the New York City school system, charges that a contractor distributed $100,000 in payola to Philadelphia city employees, the suspension of state highway inspectors in Florida on charges of accepting payola, the New Mexico roads scandal and the conviction of an Indiana purchasing director for taking bribes.

"Highway and bridge work in other states is involved," said Mr. Klinger, "there is a trend established."

Noting the practices are in direct violation of AGC's code of ethics, Mr. Klinger asked the industry to do its own housecleaning. He called for the AGC to reassure the public and take action against corrupt contractors.

In other actions, the AGC governing board:

- Heard that a 5% to 10% increase in the cost of construction machinery is expected in 1962.
- Nominated Frank Burrows, Belmont, Calif., and Charles Keller Jr., New Orleans, as president and vice president for 1962.
- Directed all individual AGC chapters to confer with their respective state officials on measures to ease rising highway costs and expedite inspections and job payments.

The organization's Highway Division expressed concern over the "unrealistic increase in highway construction costs, which can be attributed to a drastic change in engineering practices and procedures" in many state highway departments.

The Division's report said the engineering changes are cutting into the contractor's ability to maintain high production, thereby resulting in substantial cost increases.

The Division said the states should be directly concerned with the problem, because the increased cost will be reflected in contract prices they pay.

Corruption Critic Klinger
"There is a trend established."

The Board instructed individual chapters in each of the 50 states to call on their state highway engineers and request aggressive action to:

- Provide workable specifications that can be followed by the general contractor.
- Give the resident engineer authority needed to inspect the work and make necessary field changes without impeding progress and production.
- Provide better testing procedures and methods that will prove the quality of the work as it is accomplished, without limiting the contractor's ability to maintain high production.

The action on unethical practices came in the form of an unscheduled resolution from Carl M. Halvorson, Portland, Ore., chairman of the Heavy Construction, Municipal and Utilities Division.

His request to grant the Ethics and Trade Practices Committee investigative powers was adopted by unanimous acclamation.

Mr. Halvorson's resolution came on the heels of a report to the General Board from Edward O. Earl, chairman of the Ethics Committee.

Mr. Earl submitted a reaffirmation of principles of ethical conduct that was approved by the General Board.

The Earl statement called for the resignation of any member whose actions "are proven to show a willful disregard for the public interest."

It stated further that every AGC member, his agents and employees must avoid any situation that might be construed as an act of improper influence.

"Our code of ethics requires scrupu-

lous avoidance of any action which might not prove compatible with the public interest," says the AGC statement.

A report from the Joint AGC-construction Industry Manufacturers Association Committee said equipment costs probably will be increased, because a hike in steel prices is expected and because of labor negotiations in the auto industry.

The report also said lead times would probably be increased next year because inventories of component parts are low.

The same Committee also advised against use of the Pacific Appraisal Company's Green Guide of used equipment prices. It termed the Green Guide not authoritative.

Another contractor's committee consisting of members of the AGC and the American Public Works Association recommended that underground structures such as tunnels and underpasses be built to help meet the threat of the atomic age.

"A great deal of emphasis," said the report, "is being placed on civil defense at all levels of government and studies are currently under way to elevate the fallout shelter potential of existing buildings. The committee suggests to the agencies responsible for these surveys consideration of underground structures such as tunnels and underpasses, which might easily be modified to provide substantial fallout protection."

The Governing Board was told of substantial increases in sewage treatment construction and water resources development, and that federal loan and grants-in-aid programs have increased in size and now produce a substantial volume of construction.

An increase in Latin American construction jobs is possible, the Board heard, due to the recent Kennedy Administration emphasis on development of South and Central American countries.

The Board announced sale of its official publication, THE CONSTRUCTOR, to the Reuben H. Donnelley Corp., New York City. The monthly will continue to serve as official publication for the national association. The transfer of ownership is effective January 1.

The Ohio River gets a $65-million clean-up as .

Anti-Pollution Project Nears Completion

Cincinnati will start the last step of its $65-million sewage treatment program this month when it opens bids for a low-lift pump station at the Mill Creek barrier dam.

Other steps in the program, which has spearheaded the Ohio River clean-up, were three sewage treatment plants, the last of which is now near completion.

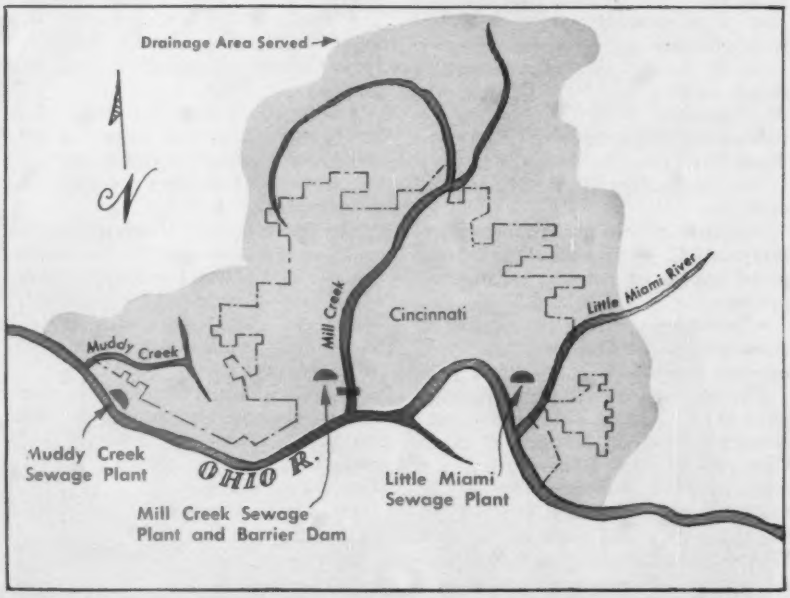
A raise in the Ohio River pool caused by completion of Markland Dam made the barrier dam and $1-million pump station necessary. Cincinnati is putting up $225,000 of the cost of the station.

First step of the clean-up program was the Little Miami sewage plant, completed in 1953 at a cost of $6 million. With a dry-weather flow capacity of 30 mgd, it treats all sewage in the Little Miami River Basin.

Keystone of the program is the 120-mgd Mill Creek sewage plant, completed in 1959. Built at a cost of $25 million, it handles the sewage from most of the City of Cincinnati. The whole sewage treatment program serves Cincinnati and 26 other cities and incorporated villages that have been pouring untreated sewage into Muddy Creek, Mill Creek, and the Little Miami and Ohio rivers.

Still under construction is the third sewage plant at Muddy Creek. By the end of this year this $3-million plant will be ready to treat 7 mgd, dry weather flow. All three plants are designed for ultimate expansion to three times their present capacities. Present facilities, using an equivalent for the industrial load, are designed to handle the needs of a population of 2 million.

The plants, in accordance with the Ohio River Valley Water Sanitation Commission's Standard No. 1, give a modified primary treatment. This removes 65% of BOD (biochemical oxygen demand). Also removed is 70% of suspended solids and all settleable solids. Over 40,000 tons of solids that formerly would have gone into the Ohio River were removed last year. Total treatment cost was about $643,000 or $24.35 per million gallons treated.



Three sewage plants are the bulwark of Cincinnati's clean-up.

The entire program, with treatment plants, pumping stations, interceptor sewers, force mains and other specialized equipment, is being built without resorting to increased taxes.

Sewerage charges alone are being used to finance both construction and operation of the system. A normal charge is levied based on the amount of water the property owner uses and a surcharge is added for producers of hard-to-treat sewage.

Cincinnati has been one of the leaders in cleaning up the Ohio River. The city and surrounding suburbs now treat 94% of their total sewage and plan to make it 100%. The principal organizer of all the talents that worked on the program has been Arthur D. Caster, superintendent of the city's Division of Water Pollution Control.

Digester failure at New York sewage plant could or could not have been avoided, say conflicting reports.

Corrosion Wrecked Prestressed Tank

Corrosion of prestressing wire has been tagged without question as the cause of the collapse of a 103-ft-dia prestressed concrete tank in Brooklyn last April.

Engineering reports made available to ENR last week make it plain that all concerned agree on that point. But on the nature and cause of the corrosion, they emphatically disagree.

The 10-year-old cylindrical tank burst without warning (ENR May 4, p. 23). It loosed 2 million gal of half-digested sludge over the grounds of New York City's Owls Head Sewage Treatment Plant and an adjacent freight yard of the Long Island Rail Road. The sludge wave bowled over three freight cars and knocked down some fences but hurt no one. It happened at 5:15 a.m. when few people were about. The tank was a total loss.

"Internal stress corrosion caused by electro-chemical action brought about the failure," declares consulting engineer Jacob Feld, of New York City, in a report to the city's Department of Public Works.

"Corrosion caused by drainage from the roof" gets the blame from consultants Schupack & Zollman, of Stamford, Conn., in a report to Preload Corp., the prestress designer and subcontractor on the tank.

Both reports indicate no confidence in the seven remaining prestressed tanks at Owls Head.

"All tanks show some localized expansive force causing the fall of small areas of pneumatically placed concrete covering," Mr. Feld reports. He recommends lining all the tanks with steel "with no reliance on any aid from the present tanks."

Schupack & Zollman says, "It is our opinion that the use of the remaining tanks at Owls Head, without complete inspection, is dangerous to life and property." However, Schupack & Zollman points out that it did not make a thorough inspection of the other tanks.

Schupack & Zollman recommends making any necessary repairs to the remaining tanks by post-tensioning them with high-strength bars or wire tendons of either galvanized or stainless steel.

The city has accepted the steel liner recommendation, not only for the Owls Head tanks, but also for eight 118-ft prestressed concrete digestion tanks at Hunts Point Sewage Treatment Plant in the Bronx. These are also about 10 years old.

"We believe that this is the only practical way to prevent future failures," reports W. A. O'Leary, director of DPW's Bureau of Sewage Disposal, in a letter to Acting Public Works Commissioner Meyer F. Wiles.

The lining job is already under contract at Hunts Point. The Department of Public Works added it to other work at the plant that was about to be bid. The linings add $700,000 to the total contract price.

The lining job at Owls Head is now out for bids. City officials expect it to cost about $1 million.

The tanks are all of similar construction—cylindrical concrete walls 12 in. thick, stressed with continuous turns of high-strength steel wire about 0.14 in. dia wrapped horizontally around the exterior under about 100,000 psi tension, and similarly tensioned vertical wires about 0.19 in. dia in chases along the inside of the cylindrical walls.

The horizontal wires were covered with a minimum of ¾ in. of sprayed-on mortar. Vertical wires were covered with ⅝ in. of troweled mortar.

The eight tanks at Owls Head were built in two rows of four each. Wall and roof sections were added between tanks to form an enclosure for operating equipment and personnel.

Brick facing was applied over most of the exposed exterior, separated from the tank wall by a 2-in. air space.

Mr. Feld summarizes his investigation this way:

"The tank failure was the result of loss in wire section. The major cause of such loss seems to have been internal disintegration of the wire fibers, with further but much smaller loss on the surface of the wires from electrolytic erosion and chemical corrosion. The only factor which by itself would eventually cause failure is the internal or stress corrosion. In view of this condition, the decision to provide interior steel liners in all such tanks to resist the full liquid pressures is proper and necessary."

Mr. Feld attributes the stress corrosion to "electro-chemical action when the internal fibers are disarranged during die-stressing, then unequally pulled by tensioning around a curve." It occurs only with tensile stresses, he says.

"Internal micro-cracks or flaws open up great areas for internal corrosion,"

TANGLE OF WIRES was a continuous spiral wound under high tension around tank.

he states. Fibers of nonmetallic slags and of non-uniform metallurgy all become areas of stress concentration with resulting internal flaw cracks and corrosion.

"The examination of the failed wires indicates considerable loss of internal metal with surfaces rusted but intact. There is no known corrective measure that can inhibit or counteract this internal disintegration of the wires while under service in the tank."

Schupack & Zollman agrees that corrosion caused the failure but differed sharply with Mr. Feld's explanation of the cause of the corrosion.

"By a thorough field inspection of the collapsed tank, it was determined, without metallurgical or chemical analysis, that the major cause of the collapse was general corrosion of the prestressing wires in the vicinity of the bricked face portion of the tank," the Schupack & Zollman report says.

It blames the corrosion on "drainage from the roof, which entered the cavity between the brick facing and the core wall. No waterproofing detail was used at the roof parapet to prevent this." Also there was insufficient mortar cover to protect the wires where galvanized metal anchors for the brick facing were embedded in the mortar, says Schupack & Zollman.

The anchors were "generally corroded to the point of complete deterioration" and acted as channels for the flow of the roof drainage, the report says. "This roof drainage, probably mixed with sewage gas, reached the prestressing steel and caused the major corrosion," said the report.

What Stress Corrosion Is

The American Coordinating Committee on Corrosion and the editorial advisors for the CORROSION HANDBOOK (John Wiley & Sons) call it "corrosion of a metal accelerated by stress."

POWER magazine says: "Tensile stresses build up at metal surface under static loading. Corrosive action concentrates stresses, causes them to exceed metal's yield point."

Warren E. Berry, of Battelle Memorial Institute defined stress corrosion in LIGHT METAL AGE magazine for June, 1961, as "a form of localized failure which is more severe under the combined action of stress and corrosion than would be expected from the sum of the individual effects of stress and corrosion acting alone. It is characterized by a brittle-type fracture. . . . There have been no reports of stress corrosion cracking in . . . the absence of some corrosive medium."

Walter O. Everling, Director of Research, American Steel & Wire Division, U.S. Steel, wrote in WIRE & WIRE PRODUCTS magazine for March, 1955, that "high-strength steel wire used as a construction material appears to be subject to stress corrosion failure only in the presence of nitrate solutions. . . . Since all high-strength steel wire used in prestressed concrete must be protected adequately against any type of corrosion, it follows that stress corrosion failure may be expected only in cases where such general protection breaks down."

Schupack & Zollman reports that some prestressing wires were completely disintegrated.

"Also wires were found which appeared sound, with slight surface corrosion, but upon being bent would exhibit a very sharp angle or kink and would generally split longitudinally exposing a sliver of corrosion between longitudinal laminations of the wire," the report says.

Schupack & Zollman also says: "It was found that upon taking any individual wire for examination, some point along the length . . . would exhibit corrosion which would be serious in regard to reduction of strength."

Mr. O'Leary blames the prestress subcontractor for any flaw in the parapet and drainage design. The parapet "was shown to be built free of the tank walls even though it rested thereon," he states. "The tensioning apparatus [for winding the wire around the tank] was suspended from a carriage rolling on this parapet. The parapet was not tensioned and when the tank wall was tensioned and reduced in diameter, the joint between parapet and tank wall separated horizontally breaking all bond at this joint," he says. "This is the joint through which the roof drainage percolated into the cavity behind the brick work," he says.

Mr. Feld reports that "the data collected on the materials used indicated that no material was deficient in any respect and the choice of the materials in no way was a contributing cause of the tank failure."

Possible implications of some of Mr. Feld's conclusions have been challenged in a brief report to Preload Corp. by H. J. Godfrey, assistant chief engineer for research and development, John A. Roebling's Sons Division of the Colorado Fuel & Iron Corp. Roebling furnished the wire for the Owls Head tanks.

"These statements [of Mr. Feld's] infer that stress corrosion can take place in the center of a wire without a corroding medium being introduced from the exterior," Mr. Godfrey says. "Stress corrosion or ordinary corrosion would only take place if the corrosive medium penetrated from the exterior surfaces," he declares.

"My examination of the wire at Owls Head on May 3 found many wires very severely corroded on the surface," he says. "Stress corrosion cracks which originated at the wire surface were also observed. I did not see any wire fractures containing disintegrated centers with the surface intact," he states.

"If the steel [in prestressed concrete construction] is properly protected with concrete or cement grout, corrosion of the wire will not occur," declared Mr. Godfrey.

Primary Route?

Interstate mileage award called political payoff

The Kennedy Administration has touched off a political furor by awarding a sizable chunk of additional Interstate Highway mileage to West Virginia.

Rep. Gordon H. Scherer (Ohio), ranking Republican on the House Public Roads Subcommittee, called the allocation a "political payoff." (West Virginia gave President Kennedy a crucial Democratic primary victory in last year's election campaign.)

Nineteen West Virginia mayors recently complained in a letter to Mr. Kennedy that not enough had been done to help their economically depressed areas. They reminded the President that "we have fulfilled our promises to you, both during your successful primary in West Virginia and in the general election. . ."

The allocation of the additional mileage was made by the Commerce Department, which oversees the 41,000-mile Interstate System. The Department approved a new 180-mile route, 145 miles of it in West Virginia and 35 in Pennsylvania, which will run from near Washington, Pa., toward the West Virginia cities of Morgantown, Fairmont and Clarksburg to the vicinity of Charleston, where it will tie in with the West Virginia Turnpike.

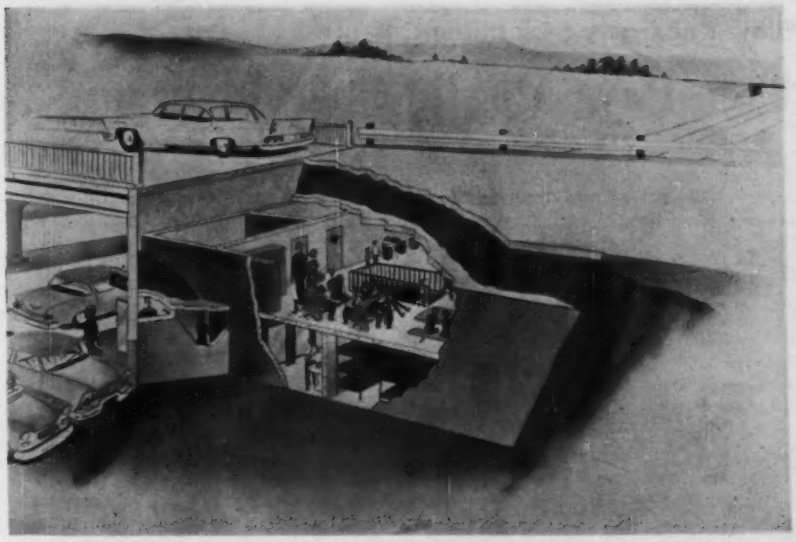
The 180 miles represents nearly two-thirds of the remaining 285 miles of Interstate System that had not been designated. This 285 miles had been held in reserve for final adjustments and additions to the system.

Presidential Press Secretary Pierre Salinger admitted that White House staff members discussed the new West Virginia-Pennsylvania mileage with the Commerce Department and Bureau of Public Roads. "I assume the decision was made in the routine way," he said.

BPR declined to discuss the background or extent of the mileage allocation except to say it has "certain merits." It was known, however, that the Bureau is not entirely happy with the Commerce Department action.

Commerce Secretary Luther Hodges said that West Virginia's poor economic condition may have been a factor in giving the state the new mileage. The federal government will pay 90% of the cost of the road. But he had nothing to say about Representative Scherer's accusation of a political payoff.

Nearly every state has made requests for additional Interstate mileage. These total more than 13,000 miles. Many of the requests did not originate with state highway departments, however, but came from congressmen, local officials and local organizations.



An approach ramp could protect 200 persons, as planners . . .

See Highways as Shelter Roofs

A fallout shelter to be built under an approach ramp on a Seattle expressway—as a prototype for a possible big program of highway shelters—is on the drawing boards.

Financed by the federal government, it is designed to spur state and local governments to include shelters in other highway construction projects.

The Seattle shelter will house 200 people and will cost $75,000. It will be completely equipped and stocked by the federal government. The shelter is part of a $5-million federal program that will provide 700 prototype shelters, either by building them or converting existing buildings. Of these, 400 will be built in high schools by manual arts students to spread knowledge of shelter construction among the building trades, 73 will be group shelters in hospitals, schools or under highways, and 200 will be in private homes.

Highway shelters would be accessible to persons caught traveling or fleeing cities. Comparatively little effort has been extended in this direction by civil defense planners. One reason is the lack of parking space for persons entering such a shelter without the possibility of blocking the roadway with empty cars. Greater difficulties in building earthfills containing such shelters and possible legal right-of-way access problems also have been cited as objections.

Sen. Thruston Morton (R., Ky.) has suggested construction of a string of big public roadside shelters as part of the federal-aid highway program and as a means of obtaining mass protection rapidly at low cost. The Kennedy Administration says that the proposal is "interesting" and that such a plan may be included in recommendations to Congress next year, if found feasible.

Montreal Gets Subway Go-Ahead

The City of Montreal has announced definite plans to build the first 21 miles of a long-sought subway system.

Construction of three lines will begin next spring, with completion scheduled for 1966. Estimated cost is $150 million.

Montreal's subway will be the second in Canada, the first being in Toronto.

Jean Lesage, Quebec provincial premier, apparently cleared the last major roadblock to a construction start by approving plans of the city administration for the system. His action assured provincial guarantee of a bond issue to finance the project.

The new subway will be called the Metro, because of its similarity in many respects to the Paris Metro (a nickname for Metropolitan). Two of the lines will use rubber-tired vehicles, as in part of the Paris system. The third will use trackage of the Canadian National Railways and the Mount Royal railway tunnel.

The system will serve 1 million people and be capable of handling 175 million passengers per year. There will be 34 stations.

The Montreal Transportation Commission will have responsibility for construction and operation of the system.

Blaw-Knox gets $4.5 million as . . .

U.S. Pays Missile-Base Overrun

Optimism rose in the ranks of missile-base builders generally with the report that Blaw-Knox received $4.5 million as partial payment of $8.6 million in excess costs incurred on its missile-base contracts.

Construction executives hope—perhaps mistakenly—that the payment to the Pittsburgh-based corporation signaled a vast break in the log jam of excess-cost claims filed by almost all companies engaged in missile-base work.

But the $4.5 million paid to Blaw-Knox covers a group of claims for work completed nearly one year ago at Forbes Air Force Base in Topeka. This amount of excess costs was charged to Blaw-Knox's 1959 operations. So at this late date, the $4.5-million payment scores as the first major settlement of missile-base claims, according to Maj. Gen. Augustus M. Minton, the Air Force's Director of Civil Engineering.

Another group of unsettled claims totaling $4.1 million represents excess costs over Blaw-Knox's contract prices at Fairchild Air Force Base, Spokane. The company charged this amount to 1960 earnings. In 1959 and 1960, the company obtained fixed-price contracts for missile-base work totaling $31.9 million.

Although the settlement with Blaw-Knox provides a good base for heightened optimism, any expectation of an immediate flood of claim-settlement checks may be premature.

"Settlements are going slow," says General Minton. Before making settlements, construction of the projects must be completed, he says. Then a year may pass before claims are settled. The Blaw-Knox settlement illustrates the painful accuracy of the time estimate. The company finished the Topeka project almost one year ago.

Moreover, the Corps of Engineers Ballistic Missile Construction Office at Los Angeles says settlements "are not geared to any timetable." It attempts to settle as fast as possible—"would have liked to have made settlements as soon as each overrun came in"—but because of the huge number of specification changes, the claims backlog mounted.

As the claims hang fire, however, the financial pressure on contractors increases. Latest indication of the missile-base burden comes from Raymond International, Inc. of New York City.

Last week, directors voted to omit the dividend for the fourth quarter. In each of the previous three quarters Raymond paid 20 cents per share dividend. The company last reported a loss and dividend omission in the mid-1930s.

In announcing the dividend omission, Chairman George Ferris said that for the nine months ending September 30, the company would show a loss of about $2 million after an offsetting profit of $786,000 in the first half. Mr. Ferris attributed the loss to unsettled claims for excess costs at missile-base projects and "to earnings on certain large overseas projects that have not materialized as expected."

In face of the Blaw-Knox settlement, the reported loss by Raymond undoubtedly will be recouped eventually.

Mission Gives 'Hard Look' At Aid to Volta Project

Nearly $200 million in U.S. aid is staked on the findings of a Presidential mission that has gone to take a "last, final, hard look" at Ghana's ambitious Volta River development plan.

The money was considered all but committed as late as last July (ENR July 13, p. 19), but the left-leaning attitude of Ghana's President Kwame Nkrumah has made President Kennedy think twice.

Head of the three-man mission is Clarence B. Randall, former head of Inland Steel Corp., and chairman of the Council of Foreign Economic Policy under President Eisenhower. He is charged with securing answers to three questions:

- Is the Volta River project economically feasible—that is, will the proposed hydroelectric dam and aluminum smelter earn at least enough to pay back American loans?
- Is there internal political stability in Ghana?
- Is Ghana truly a neutral country?

At stake is financing for the $196-million Akosombo Dam, a 370-ft rockfill structure already under construction by an Italian combine, and a $128-million aluminum smelting plant. Volta Aluminum Co., Ltd., a consortium of Kaiser, Reynolds and Olin Mathieson, plans to build the smelter at Tema.

Akosombo Dam is the largest of three dams ultimately destined to control the Volta River. Russian engineers are designing and will help build a power dam to go in Bui Gorge, about 200 miles upstream from Akosombo. And Carlos Berenhauser, an Argentine engineer, is reported to be designing a power dam to go at Kpong, a few miles downstream from Akosombo.

Airport Will Get New Terminal

A $21-million expansion of Detroit Metropolitan Airport has been approved by the Wayne County Road Commission, which operates the airport.

Estimated expenditures for the project will include:

- $8.5 million for a new terminal building.
- $2.5 million for expansion of the existing terminal building.
- $5 million to $8 million for construction of new hangars.
- $3 million for improvements of taxiways, aprons lighting systems.

The proposed terminal, a two-story structure 400 ft long, 150 ft wide, will be connected to the existing terminal by a 1,500-ft-long heated, air-conditioned concourse. The existing motel will be enlarged from 37 rooms to 150 rooms, and the 1,500-car parking lot will be enlarged to accommodate 3,500 cars. To replace the two existing finger ramps and their 15 gate positions five new ramps will be built with a total of 52 gate positions.

The program, which a sale of revenue bonds will finance, is scheduled for completion within 2½ years. The Commission has yet to obtain detailed architectural drawings for the work, but it expects to have its designs far enough advanced by October 1962, to start bid lettings. Actual construction is scheduled to begin in January 1963.

On completion of the expansion program, six airlines now using Willow Run Airport will shift their operations to Metro, which is 12 miles nearer Detroit. The airlines are Eastern, Trans World, United, Mohawk, Lake Central, and North Central.

El of a Job

Philadelphia transit line counts faults by hundreds

Philadelphia's municipal payola scandals (ENR June 29, p. 17) were revived last week when a firm of consulting engineers reported 671 instances of faulty work on the Frankford Elevated (high speed line) of the Philadelphia Transportation Co.

The work was done in part by contractor Eli G. Travis, who is now awaiting trial as a result of the scandals uncovered earlier in the year.

Richardson, Gordon and Associates, consulting engineers retained by the city, said their survey disclosed 446 instances where the work done on the Frankford Elevated was incomplete or inadequate. And the work done on another 225 items, the Pittsburgh consultants said, was performed in such a manner that the useful life of the elevated structure could be seriously affected.

The engineers' report notes that "serious instances of nonperformance of the required work have been found."

Among the deficiencies noted:

- More than 1,500 welds were smaller than the specifications required.
- Concrete work near one of the stations was of inferior quality.
- Loose concrete removed from an area near another station was never replaced.

The Richardson-Gordon firm will also make another survey for Philadelphia. This one involves a contract between the city and the engineering firm, Yule, Sticklen, Jordan and McNee. The latter firm had the contract to design the $3-million repair job on the Frankford Elevated, write specifications for the work and to supervise the work.

Richardson-Gordon is to find out if Yule, Sticklen, Jordan and McNee actually carried out the contract.

Referring to the new survey, a Philadelphia spokesman said:

"We want to know why Yule, Sticklen, Jordan and McNee did not list a number of things to be repaired that now show up as needing to be repaired.

"It is also apparent that they fell down somewhere on their supervision and inspection of the work.

"We know that certain city and PTC employees were at fault in this case, and we also know that this firm had a force of people on the job. The question is: Why didn't they know what was going on?"

Finally, Richardson-Gordon has been given the task of estimating the amount of the city's claims against the PTC and the contractors on the Frankford El work.

Around the World . . .

- **Road safety**—North Carolina's Safety Engineering Coordinating Committee plans to eliminate engineering hazards that result in highway accidents. It will coordinate the work now done by the state's Motor Vehicles Department, Highway Department and Traffic Safety Council.

- **Highway workshop**—The second annual BHIF-AASHO Public Understanding Workshop will take place January 15-17, 1962 at the Hotel Muehlebach in Kansas City, Mo. The early date will allow for four months of planning and publicity placement opportunities before observance of the second National Highway Week, May 20-26.

- **Old bugaboo, pumping**—The Ohio Department of Highways has taken bids for pavement repairs on sections of the Cincinnati-Conneaut Freeway (I-90) opened to traffic less than 2 years ago. Trouble is due to pumping of saturated base material from beneath the concrete pavement. Engineers say the base material is not permeable enough. Corrective measures improve drainage.

- **Pile standards**—The AASHO Bridge Committee has accepted standards covering square and octagonal prestressed concrete piling, ranging from 10 in. to 24 in. A joint committee of the AASHO and the Prestressed Concrete Institute developed the standards. Copies are available for 30¢ each from PCI Headquarters, 205 W. Wacker Drive, Chicago 6, Ill.

- **Fair in distress**—California State Fair Board wants to retain a consulting firm to advise on the construction and operation of a fair and exposition at their American River site. Interested firms should write immediately to Dudley T. Fortin, Manager, California State Fair Board, P.O. Box 2036, Sacramento, Calif.

- **Highway budget zooms**—The California Highway Commission has adopted a record budget of $658 million for the 1962-63 fiscal year. Of the total—the largest in history for any state highway department—about $376 million will go for state highway construction and improvements (contracts and engineering).

Dallas Tower Sets Western Record

Demolition preceding construction of the tallest office tower west of the Mississippi, has begun deep in the heart of downtown Dallas.

Next spring, foundation work for the 50-story First National Bank building is scheduled to begin. And sometime in autumn, 1964, the $30-million skyscraper, topping the short-lived record of Houston's 44-story Humble Oil & Refining Co. building, should be completed.

Tower height in the original design of the Dallas building was nearly 100 ft higher than the 628-ft height presently planned, but objections by the Federal Aviation Agency led to a redesign. The building site is almost directly aligned with a proposed 8,800-ft runway at nearby Love Field. Federal aviation authorities felt that the 742-ft tower as proposed in the original design would pose a hazard to air operations.

The glass-walled tower will rise out of an eight-story base building covering the entire 2-acre site. Exterior columns, faced with white sculptured marble, will frame a 10-ft-wide arcade five stories high. White marble will face the base building walls above the arcade level.

In plan, the tower measures 225x75 ft. At the center of splayed longitudinal walls, the building width measures 95 ft.

The tower walls will comprise eight acres of gray glass that will be divided vertically by marble-faced exterior columns.

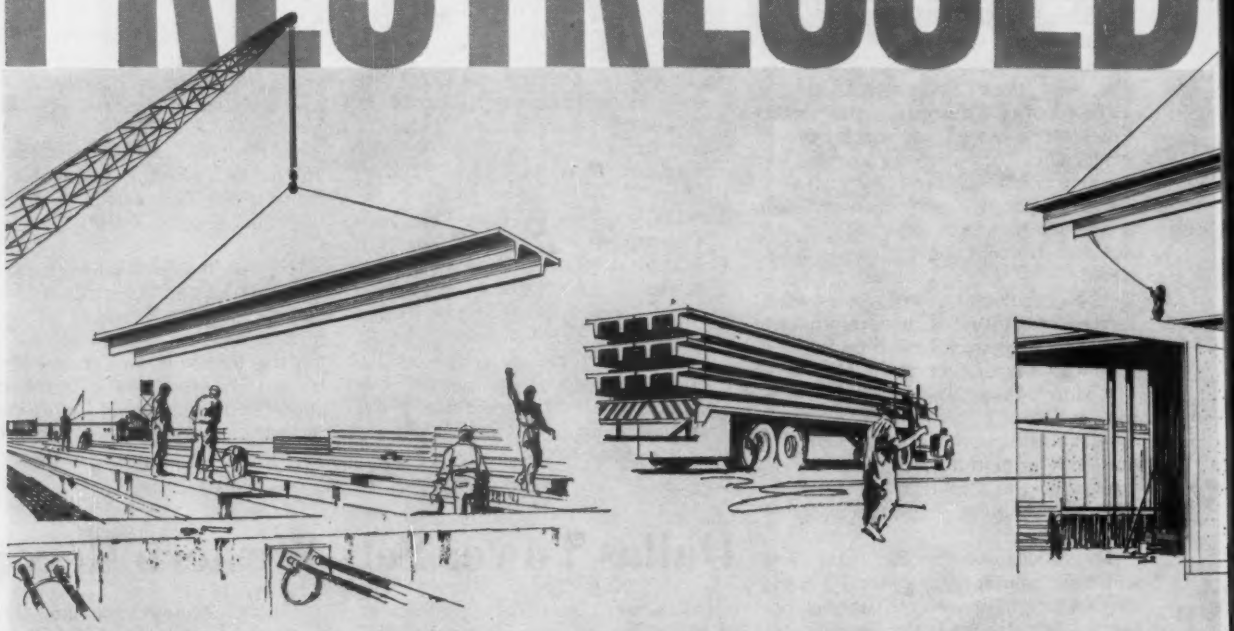
The building will contain about 37 acres (1.6 million sq ft) of floor area, with two underground levels providing parking space for 800 cars. Air conditioning will feature a 5,000-ton refrigerating system.

The welded structural steel frame will contain more than 20,000 tons of A7 and A36 steel.

Designed for wind loads varying from 20 psf to 37 psf at the top, the tower will have rigid column-girder connections with some K-bracing to resist lateral loading.

Design is a joint venture of Thomas E. Stanley and George L. Dahl, architects and engineers, of Dallas. Demolition contractor is Morrow Wrecking Corp. of Dallas and Fort Worth. The excavation contract will be let separately, and the general contract will be awarded while foundation work is under way.

PRESTRESSED



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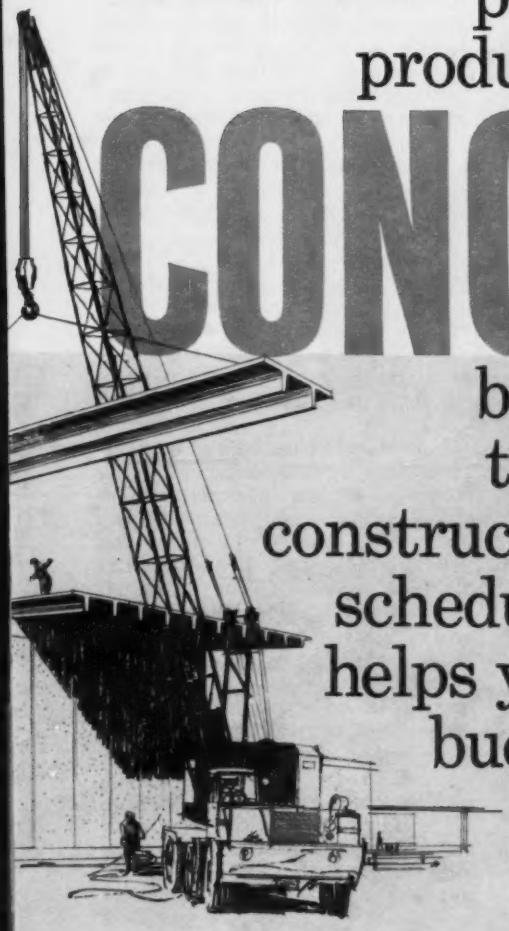

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To remove imbalance between prosperous North and impoverished South . . .

Italy Builds More Dams

By Waldo G. Bowman

Italy, without question, occupies a high position among the principal dam building countries of the world. With a total of 404 dams over 33 ft high in service or under construction, she can lay claim to the largest number of any European country. For another possible record, she has built 169 of these dams during the past decade, and 18 of them exceed 330 ft in height.

As a corollary of this activity, Italian engineers have also made important contributions to the dam building art. They have introduced the hollow buttress dam and the cradle-shaped pulvino foundation. And they have advanced the use of the double-curvature arch, of structural models in dam design and of puzzolan and ferric-puzzolan cements in construction.

Nearly all of this activity has been in the Alps in the north of Italy where so many dams have been built that very little of the Alpine snowmelt manages to get to the sea without turning a hydraulic turbine. Now, however, Italian dambuilding is moving south. For one thing, a decade of stepped-up construction has greatly reduced the number of good damsites in the Alps. But Italian dam construction has been increasing farther down the peninsula in the Apennines, and on the islands of Sicily and Sardinia, for a much more important reason—economic necessity.

This change in the locale of Italian dambuilding is a part—and a basic one at that—of an economic program of such great import that the political future of this important Western nation literally rides on the consequences. If the impounded waters from the new dams can improve agriculture and enhance the power supply in southern and central Italy sufficiently to help raise the prosperity of these regions, political stability can be maintained in the face of Communist pressures. If the results are insufficient, and the current economic undernourishment of the south compared to the booming prosperity of the north persists, a serious political upheaval is not beyond possibility.

This need for a better geographical balance of the economy is of long standing. It arose when Italy became a single nation instead of the patchwork of little kingdoms, duchies and city-states that existed prior to 1861. The northern third was prosperous, while, southward, extreme poverty was the lot of great masses of the people.

To this day this economic imbalance remains. The difference is that, at last, a major effort is underway to correct the situation. It began about 10 years ago with the passage of laws relating to land redistribution, public works and the establishment of industry in Southern Italy. And the special feature is a Southern Italy development bank called the Cassa per il Mezzogiorno, which was established to manage a $2-billion development program. About 20% of this amount has been financed by U.S. foreign aid funds.

Financial incentives have been offered to private industry to locate in the south. The state-owned industries, of which there are several powerful ones in Italy, were even ordered to put more than half of their new investments in that part of the country. And to service and supplement these industries in raising the standard of living a huge public works program was undertaken.

Significantly for engineers and dambuilders, the construction of dams is a major element of this public works program. Significantly, too, in now shifting their attention to the south, they will face some new conditions.

In the first place the dams they have built in the north have been almost exclusively for hydro power. They have built so many of them that now nearly three-quarters of all of Italy's power is generated in the north. In contrast, a prime purpose of nearly all of the southern dams will be to supply irrigation water, and many will have flood control functions as well.

Hydro power will be included on southern dams whenever possible, since power of any kind is badly needed. Central Italy now accounts for only 15% of the country's total generating capacity, southern Italy 10%, Sicily

Map indicates dams shown to International Dam Congress delegates this summer

ENR's Editor ***Waldo G. Bowman*** *followed his look at Germany's roads and buildings (ENR Aug. 10. p. 33) with an examination of Italy's extensive dambuilding activities.*

2.5% and Sardinia 1.5%. But hydro projects comparable in size or number to those of the north are out of the question for these regions. Thermal plants will be the principal power source there, a situation that is already reflected in the fact that more thermal than hydro power is currently under construction in Italy—1.6 million kw compared to 1.3 million.

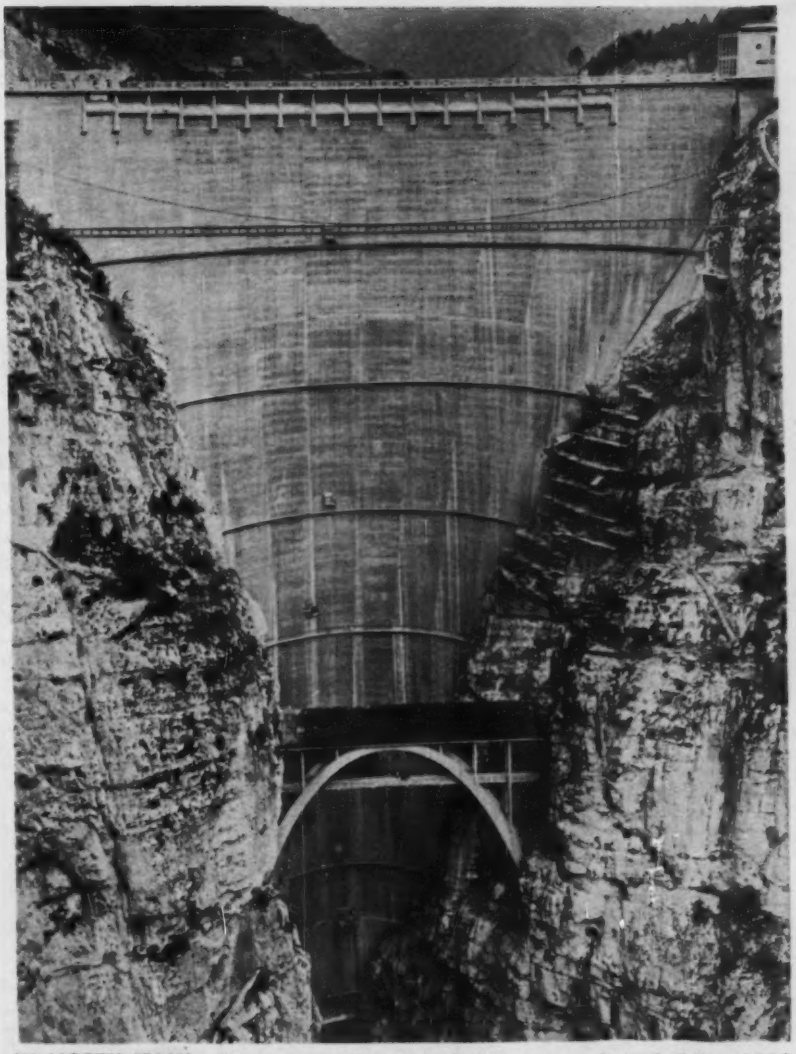
Another change to be encountered in the shift to the south is that more of the dams will be government owned, since irrigation and flood control will not usually attract private capital. In the north the dams are in the hands of private power companies or joint private-government corporations, a result of definite Italian government policy to enlist the aid of private capital in developing the country's water resources.

Since 1938, when an enabling law was passed, private interests undertaking water development projects have been granted a variable degree of tax exemption and a subsidy equal to one-third of the estimated construction cost or of the actual construction cost, whichever is lower. Additionally, if a project were one that the government might have had to build anyway, the subsidy could be raised to as much as 60%. Subsidies in this range could also be granted when the project would have supplemental use in irrigation or land reclamation.

In return for this financial aid the government shares in the profits of the project until it has recovered one half of the subsidy granted. The usual formula is 25% of net profits exceeding a 7% return on the capital, and 50% of all over a 10% return.

Dambuilding in the south can still benefit from this arrangement, but with less hydro in the picture the appeal to private capital will be correspondingly less. In the south, as in the north, the subsidies will be granted by a decree issued by the Ministry of Public Works in agreement with the Ministry of Finance. The Ministry of Public Works will also continue to exercise control over all dams in Italy through its Superior Council of Public Works and two administrative bodies, the Central Hydrographic Service in charge of data collection and the Dams Service, which supervises construction.

In any event, with abundant and experienced engineering and construction talent and a government ministry geared to administering both private and public dambuilding programs, Italy is well prepared to expand dambuilding from its original concentration in the north to the under-developed south. This shift is certain to advance industrialization and improve agriculture in southern Italy, but just how far it will push the country toward the economic unity that it seeks



IN NORTH ITALY, Alpine gorges and water for hydro power spark the building of high dams, like 860-ft Vaiont, the world's highest concrete arch.

IN SOUTH ITALY the needs for irrigation and flood control must be supplied by medium size dams of which San Pietro, a 2-million-cu-yd earthfill, is typical.

is still an open question whose answer is some years away.

A considerable improvement in the south's economy has already resulted from the subsidized development program. At the same time, however, the north has also become more prosperous, paradoxically in part because of the booming business it has enjoyed in supplying materials and equipment for the public works program in the south. And as for the central part of the country, which lacks the natural resources of the north and does not share in the subsidized program of the south, it has hardly progressed at all. Sooner or later its problems must also be attacked.

The geographical imbalance of the economy, therefore, remains a challenging problem. And in its continuing efforts to reach a solution Italy is exploiting its dambuilding possibilities to the full.

These possibilities were paraded before an international technical audience this past summer at the Seventh International Congress on Large Dams in Rome. Later, 500 Congress delegates made study trips in the north and south of Italy as well as on the islands of Sicily and Sardinia. About 10% of the delegates who participated in the study tours were from the United States. The dams they visited and heard about afford a picture of Italy's dam practice and the contributions her engineers have made to advance the art.

Alps Spawn Notable Dams

Most of Italy's great dams are in the Alps—and some of them are very great indeed. Vaiont is the highest arch dam in the world. Malga Bissina is the largest and longest of the hollow buttress type. Pian Palu is a 170 ft high articulated structure of large concrete blocks.

All of these dams fit into remarkably integrated water collection and power systems ,and a number of them, either completed during the past few years or still under construction, incorporate unusual technical features.

Vaiont Dam, 860 ft from foundation to crest, is both Italy's highest dam and the world's highest arch. Designed and built under the supervision of Carlo Semenza, manager of the hydroelectric department of the Societa Adriatica di Elletricitta (SADE), it was completed last fall after four years of construction. The dam plugs a deep, narrow gorge with a double-curvature arch 625 ft long and containing 470,000 cu yd of concrete. It is 11 ft thick at the crown and 73 ft thick at the base.

The design of the dam was aided by studies of two models, 1:35 scale, at Italy's famous Instituto Sperimentale Modelli e Strutture (ISMES) laboratory at Bergamo under the direction of Prof. Guido Oberti. The second model, made after excavation at the site had been completed, reproduced foundation conditions more exactly, and indicated improved distribution and lower maximum values of stresses—compression of 920 psi and almost negligible tension.

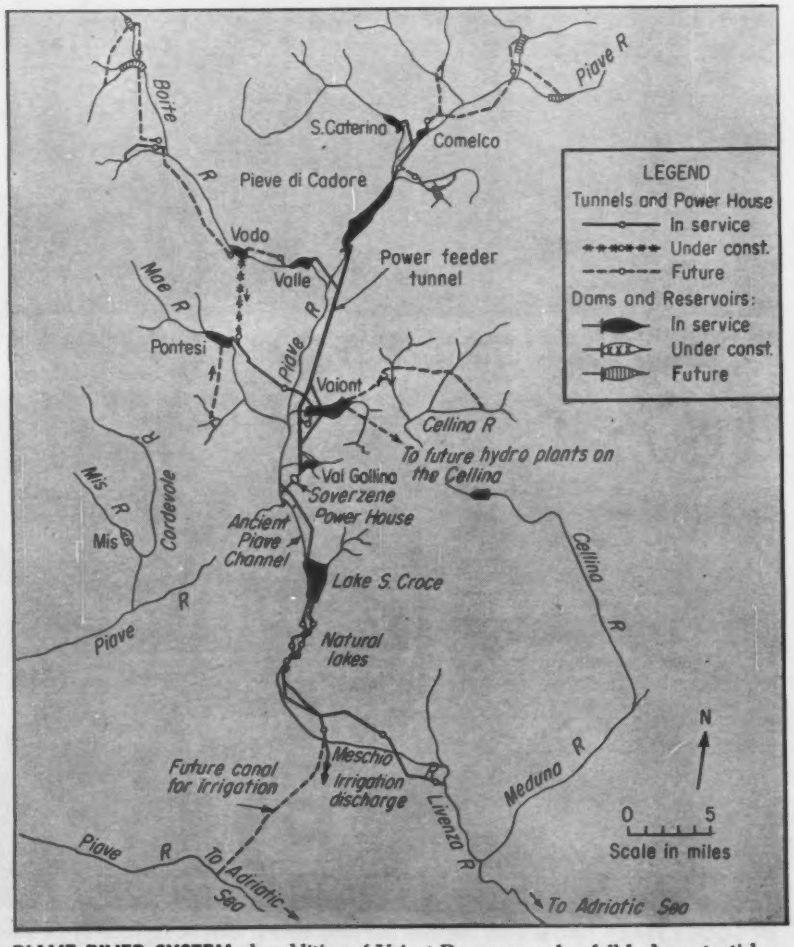
In accord with general Italian practice the dam is separated from the limestone walls and floor of the gorge by a sill called a pulvino. The perimetral joint through which the main body of the dam rests on the pulvino is cradle-shaped with the higher side downstream. The dam is equipped with an overflow spillway (sixteen 22-ft-wide openings) capable of discharging 5,000 cfs. Another 5,000 cfs can also be discharged through two outlet tunnels in the left gorge wall, near the bottom and midheight of the dam.

Excavation of vertical access shafts to these outlet tunnels and the driving of the various power tunnels afforded good opportunity to inspect the foundation rock, which was found to require extensive grouting. This was accomplished from four horizontal tunnels drilled into each bank at four different elevations. The resulting grout screen extends outward 450 ft on either side of the dam at the base and some 180 ft at the top.

Despite this foundation improvement, additional work of a similar nature is currently being carired out at Vaiont. Involved is more grouting of the abutments near the top, and the construction there also of blocks of concrete to confine and brace the gorge faces against which the arch abuts.

While this additional work might be classed as normal, in that its possibility was foreseen, another current job at Vaiont, of much greater magnitude, was entirely unexpected. This is the driving of a 15-ft dia tunnel under the bottom of the reservoir from a point just above the dam for a distance of over a mile upstream.

(story continued p. 36)



PIAVE RIVER SYSTEM, by addition of Vaiont Dam, approaches full hydro potential.

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The unique and remarkable purpose of this tunnel is to assure that water can be fed to the dam's outlets in case the reservoir should be blocked by landslides. Warning that this is possible came last year when a slide estimated to contain over 1 million cu yd occurred. When signs of instability in mountain masses of much greater size higher up were observed, it was decided to drive the tunnel and have it ready in case a catastrophic slide should block the lower end of the reservoir.

In the meantime, Vaiont's reservoir is going into service to fulfill its purpose of increasing the power capability of the Piave River system. This system (see map) typifies the Italian objective of full use of the Alpine waters. How Vaiont was fitted into it is broadly illustrative of Italian practice.

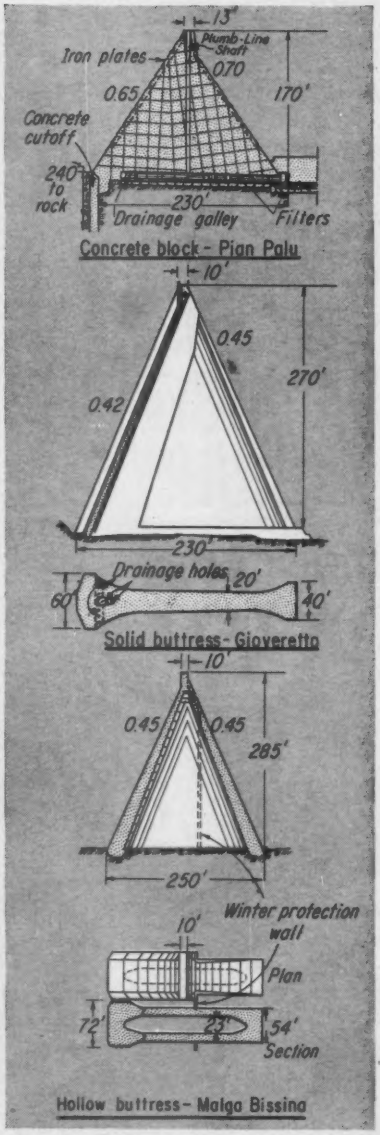
The 100-mile-long Piave River runs southward from the Italian-Austrian border for about 30 miles, and then after one broad bend to the west turns southeast to empty into the Adriatic Sea north of Venice.

Originally, in some early geologic period, the river ran straight south. When it was turned westward it left behind its original bed and a series of lakes, the largest and northernmost of which is Lake Santa Croce. Back in the 1920's, SADE, the company that controls the Piave power rights, diverted a large part of the streamflow back into its ancient course, and conveyed it by canal to Lake Santa Croce. This natural lake, enlarged by an earth dam, became the storage reservoir to feed eight small power stations constructed below. The total head is about 1,000 ft and the total capacity about 180,000 kw.

Next, in 1930, the company went far upstream and built two dams and a 40,000 kw power plant. Two additional dams and power stations are planned even nearer the headwaters.

It is between this upper development scheme and the lake scheme that a third and much larger scheme has been under development since the war. The main storage (50,000 ac ft) is provided by Pieve di Cadore dam, a 370-ft-high and 1,350-ft-long arch-gravity structure completed in 1949. From this reservoir a feeder tunnel runs along the left side of the river for 16 miles to Val Gallina reservoir. From there the water is dropped 935 ft in four 8.5 ft dia prestressed concrete penstocks to Soverzene power plant, which has a capacity of 220,000 kw. The discharge from Soverzene flows south to Lake Santa Croce.

The Pieve di Cadore-to-Soverzene facilities form the backbone of the scheme, but other reservoirs and power stations on the Piave tributaries swell its water supply and power output. One of these reservoirs is Vaiont, located on a left bank tributary of that name.



THESE THREE TYPES OF DAMS owe their development to pioneer work on the part of Italian engineers.

Others are located on two right bank tributaries, the Boite and the Mae.

Vaiont is the key structure because it provides for 130,000 ac ft of additional storage. Only a small amount of this water can come from the catchment area of the Vaiont. Moreover, since the maximum reservoir water level is 130 ft higher than the feeder tunnel from Pieve di Cadore (which crosses the Vaiont on an arch bridge just below the dam), only the lower part of the reservoir can be filled from this source.

The solution, to complete the filling, is to convey water from the reservoirs on the Boite and the Mae, which are at a higher elevation than Vaiont. The water will come from Pontesi reservoir on the Mae, but this will, in turn, be fed from Vodo reservoir on the Boite.

Not only does the Vaiont reservoir provide additional water to be released through the feeder tunnel to Soverzene power plant, but the head it makes available above the level of this pressure tunnel—130 ft—is used in a 9,000-kw power plant built near the dam.

It is interesting to note that plans have also been made to convey water to Vaiont reservoir from a river outside the Piave system, the Cellina. It would be brought in from the higher elevations of this stream and discharged through two new power plants into the same stream at a lower elevation.

Mis Dam, a 300 ft high concrete arch of 80,000 cu yd, under construction on a stream of that name, is also a part of the Piave development, but of a "western section" as distinct from that described above, which is called the "northeastern section." The western section relates to that part of the Piave encompassed in the large westward bend of the river. The Mis is a tributary of the Cordevole, which empties into the Piave.

There are already six power plants on the Cordevole. These together with Mis and others planned promise this western section a power capacity of about 250,000 kw. The northeastern section, with a present capacity of 460,000 kw can be increased to about 600,000 kw when the planned dams in the north are built. All of the water from both sections will eventually be used for irrigation in the lower Piave River valley.

Beauregard Dam, in the extreme northwest corner of the country, is of arch-gravity type, 435 ft high, 1,350 ft long and contains 570,000 cu yd of concrete. It rests on a pulvino, generally about 15 ft thick, but increased to about 65 ft under the center of the dam. It is also thickened at the top at each end to form two small abutments.

Both construction and design were complicated by the presence of a large pocket of highly compressed gravel at the bottom and under the left abutment. This gravel could only be removed and replaced with concrete by a complicated, multi-stage operation.

First, the deposit was pierced by enough tunnels at different elevations to permit constructing a series of vertical diaphragms between sound rock below and above the pocket. Arches of reinforced concrete were then built between the tops of the diaphragms to support the overlying rock. The next step was to excavate from top downwards between the diaphragms, removing the material through galleries left in the diaphragms when they were cast.

Additional concrete arches were built between the diaphragms as the excavation proceeded downward. Upon completion of the excavation the pocket was entirely filled with concrete pumped in through pipes installed in the galleries in the diaphragms.

The dam feeds an underground powerplant equipped with one 70,000- and two 45,000-kw generators connected to turbines operating under a maximum head of 3,400 ft.

Place Moulin Dam, under construction in the same general region as Beauregard, is also an arch gravity dam, but much larger. It will attain a height of 500 ft, have a crest length of 2,140 ft and require 2,000,000 cu yd of concrete. This dam, which also rests on a cradle-shaped pulvino, will be only 23 ft thick at the crest, but will have a base thickness of 165 ft. Because of this relatively large base width, the dam will be built with a longitudinal joint to aid in dissipation of the heat of hydration of the concrete.

Extending from the foundation to about mid-height, this joint, along with the 41 transverse joints between the blocks into which the dam is divided for construction purposes, will be sealed with cement grout. Water circulated in pipe coils will be used to cool the concrete, which is being mixed with a puzzolan type cement in an amount specified at 425 lb per cu yd.

The dam will feed a 150,000 kw power station through an 8.5 mile pressure tunnel, followed by a 3.3 mile open channel and finally a 1.2 mile penstock.

Valle di Lei Dam, an arch-gravity structure 470 ft high, 2,275 ft long and requiring 1,150,000 cu yd of concrete, is of particular interest because of its international character. The dam is located in Italy and was designed and built by Italians, but the power plants that it serves are in Switzerland and are the product of Swiss engineers and contractors. Moreover when the dam is finished a border adjustment will be made that will place it in Switzerland.

Variable rock in the foundations required an extensive grouting program to improve and equalize the mechanical characteristics of the rock and assure watertightness. Two parallel grout curtains were used. The first was put down before dam concreting started, the second from a gallery along the perimetral joint after the dam was completed. The maximum depth of holes was 230 ft and the maximum grouting pressure 1,000 psi. Each curtain required the drilling of 30,000 ft of holes, the first curtain absorbing 120-lb of cement per ft and the second 45 lb per ft. Consolidation grouting in 69,000 ft of holes required a total of 1,450 tons of cement, while bond grouting between the concrete and the rock, which was carried out from the perimetral gallery and from the downstream face of the dam, took an additional 200 tons of cement in 46,000 ft of holes.

THE CONCRETE BLOCK DAM of Pian Palu was cast in 13-ft cubes to form independent buttresses that can adjust to differential foundation settlement.

LARGEST HOLLOW BUTTRESS DAM is Malga Bissina in the Alps, although its height of 285 ft is second to 368-ft Ancipa Dam in Sicily.

Concrete for the dam was mixed with a cement containing 37% pozzolan, and three different proportions of cement were used to meet the strength requirements in different parts of the dam.

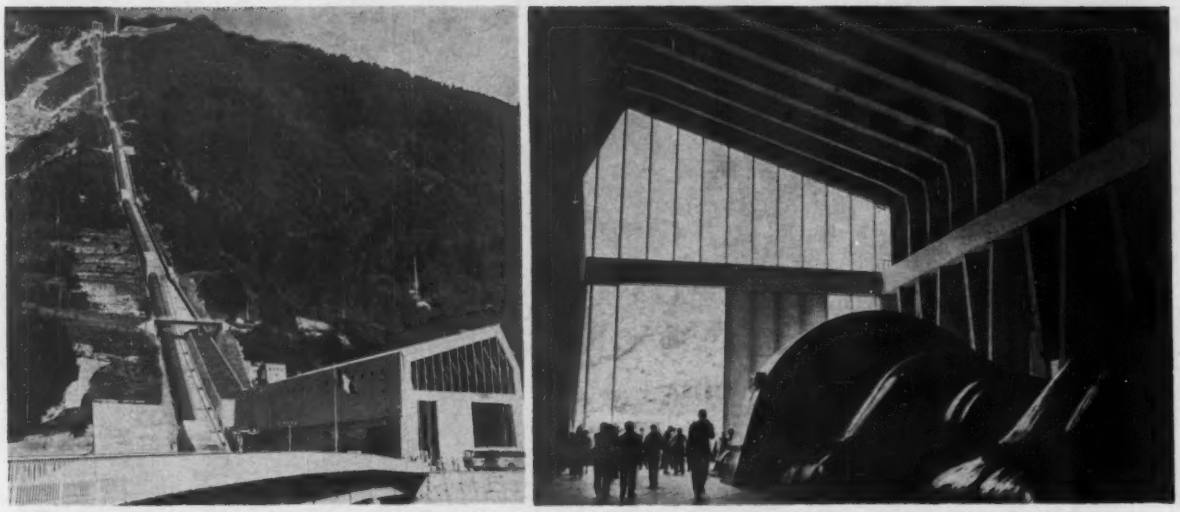
Alpe Gera Dam is a straight concrete gravity structure of 2,000,000 cu yd, which will attain a height of 565 ft, when it is completed in 1965. Its particular technical feature will be an upstream facing of steel sheets.

Frera Dam, of arch-gravity type, 450 ft high, was built in three stages: first the upstream half from the foundations up to about mid height; second the matching downstream half up to this same elevation; and finally the upper part of the dam from midheight to the top.

Constructing the lower part of the dam in two halves created a longitudinal joint, the first time such a so-called circular joint was used in Italian dam practice. Unlike Place Moulin Dam, where a longitudinal joint is used to reduce the size of the monolith for cooling purposes, Frera's joint resulted from a desire to complete a part of the dam quickly so that water storage could begin in the reservoir.

Prior to adoption of the longitudinal joint idea, models were made that confirmed the stability of the half structure, and also the fact that the completed dam incorporating a circular joint would function as an integral structure.

Cancano Dam, an arch-gravity structure, 445 ft high and 1,250 ft long, is notable principally because it is



CIMEGO HYDRO PLANT, fed by water first stored by Malga Bissina Dam, is a unit in the fully developed Chiese River system. V-shaped columns eliminate need for longitudinal bracing of the crane girder, which also carries the concrete rigid frames of the roof.

scheduled to be raised to a height of 563 ft. This will double its present reservoir of 100,000 ac ft.

Since raising Cancano Dam will, of course, require that it also be thickened, a series of bars about 4 ft long, hooked on their inner ends and flush with the downstream face on their outer ends, was installed during the first construction stage. These outer ends were threaded and covered with temporary caps. When second stage concreting is carried out, similar hooked bars will be screwed to those already in place to tie the two faces together. Their basic purpose will be to permit the separation joint to be grouted without forcing the faces apart.

Pian Palu Dam is of the uncommon concrete-block type, and was adopted in this instance as elsewhere in Italy because uneven foundation settlement was likely to occur. The dam is 170 ft high and 530 ft long, of which the concrete block construction occupies 340 ft, the remainder being gravity section abutments.

Structurally the dam consists of concrete blocks cast in place in the form of cubes 13 ft on a side. They are arranged in columns to form 13-ft-wide buttresses having a 0.7 batter downstream and 0.65 upstream. The openings between the buttresses, about 5 in. wide, are filled with gravel to act as lubricated joints. In addition the horizontal joints between the blocks are allowed some freedom of movement by virtue of allowing time for the concrete of one block to harden before the next lift was begun.

The upstream face of Pian Palu Dam is covered with $\frac{5}{8}$ in. thick ingot iron plates. The plates are welded into squares 13 ft on a side that are surrounded by corrugated iron strips, which serve to act as expansion joints.

To assure watertightness in the streambed, which is an alluvium, a cutoff wall 10 ft thick and 240 ft deep was installed by sinking a series of 10-ft-square shafts. The cutoff wall was also extended up the left abutment where deposits of fractured schist left by landslides were also very permeable. Because the water of the region is aggressive, the concrete was made with a ferric-puzzolan cement, 600 lb per cu yd for the cutoff and 280 lb per cu yd for the dam blocks.

A unique phase of the project was the deepening of the reservoir area by washing out about 2 million cu yd of fine alluvium. This was accomplished by water jets operating under a head of over 300 ft with water taken from springs that exist all around the reservoir area.

Santa Giustina Dam, although completed ten years ago, still maintains a position of technical interest in the field of concrete arches. Its 500 ft height was initially exceeded only by Seattle's Ross Dam. Now Tignes (France), Mauvoisin (Switzerland), Vaiont (Italy) and Karadj (Iran) are also higher, and Kurobe (Japan) and Dez (Iran) will be. But Santa Giustina probably remains the most slender. Located in a narrow, vertical wall gorge, it is only about 300 ft long, and its thickness only 54 ft at the base and 11 ft at the top.

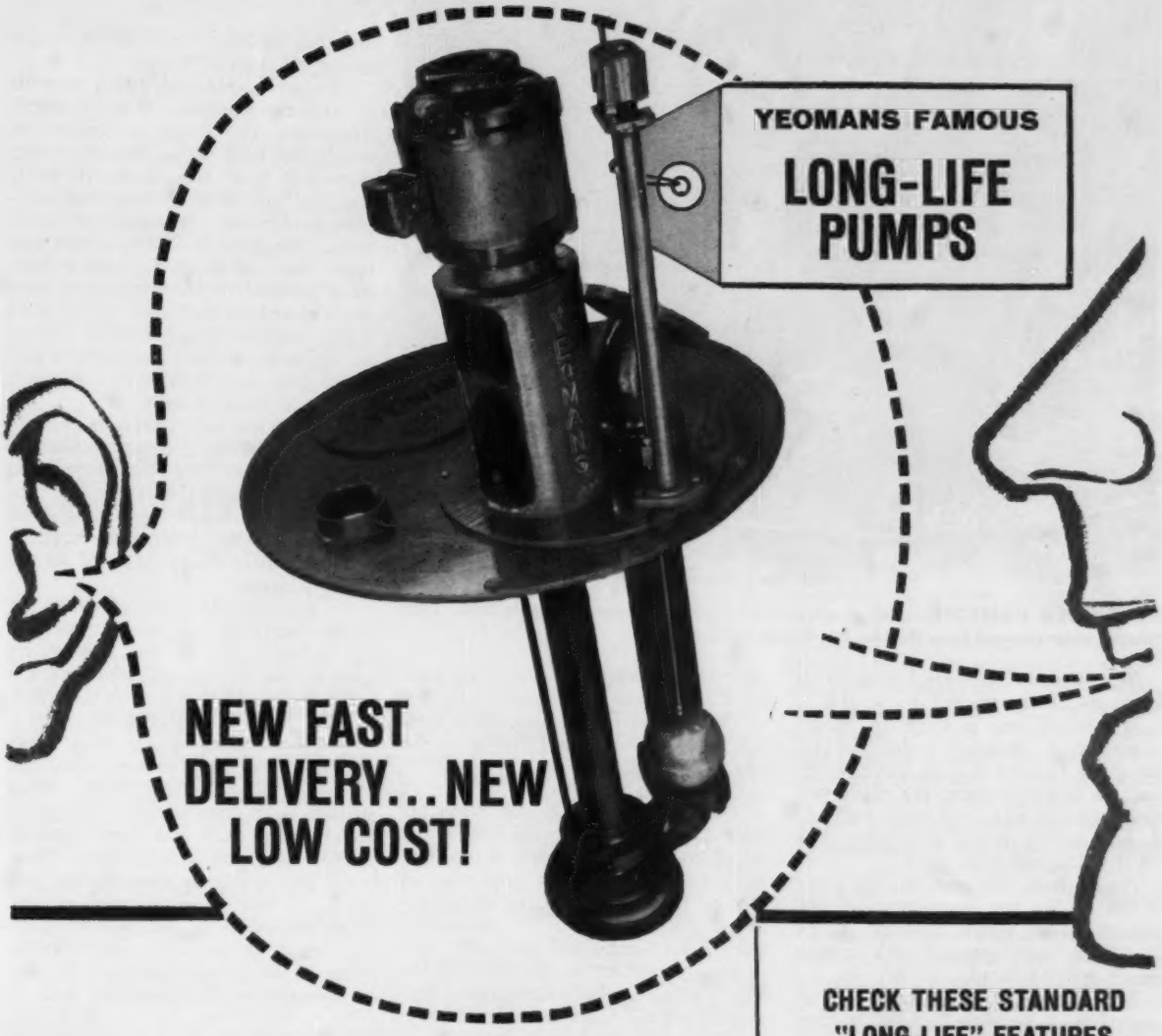
The most striking characteristic of Santa Giustina, however, relates to the amount of grouting required; the grout curtains extending for 300 ft into the gorge walls and 200 ft below the riverbed, have a surface area five times that of the dam itself. The 10,000 tons of cement injected into the 60 miles of boreholes reached one-third the amount used in the dam concrete.

Gioveretto Dam is a modified solid buttress type structure 270 ft high, 1,250 ft long, which required 400,000 cu yd of concrete. The buttresses are solid except for a hollow chimney in the upstream head portion, introduced to aid in the dissipation of the heat of hydration. This relatively small cavity is in contrast to the large openings in the so-called hollow buttress dams, also typical of Italian practice. Synthetic rubber seals are used in the joints between the upstream heads of the buttresses. The dam feeds a 50,000-kw power station.

Malga Bissina Dam is Italy's latest and longest hollow buttress dam, a type developed and frequently used by Claudio Marcello, director of hydroelectric construction for Italy's largest power company, Societa Edison.

It is 285 ft high, and 1,600 ft of its total length of 1,850 ft, consists of 22 hollow buttress elements. The dam concrete, 585,000 cu yd, was made with ferric-puzzolan cement and crushed aggregates including the sand.

Malga Bissina is the topmost development on the Chiese River, and its reservoir water actuates three successive power plants downstream. First is the Malga Boazzo underground station with two 47,500 kw units operating under a gross head of 1,830 ft. Its discharge goes into a reservoir created by a dam that is L-shaped in plan, the shorter leg consisting of five hollow buttress units while the longer leg is a solid gravity section containing an overflow spillway. Water released from this reservoir goes to the Cimego power station equipped with two 110,000 kw units operating under a gross head of 2,400 ft. (This station also contains a 9,200 kw unit operating under a 770 ft head of water from a tributary river.)



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IN RUGGED CANYON, 1,200 ft above Lake Garda, Toscalano Dam is being built to store water pumped from the lake by off-peak steam power.

The Cimego tailwater reservoir is relatively small, formed by a 100 ft long concrete weir in the river, but its construction presented a difficulty because the location was on aluvial material. As a consequence, the entire bottom, some 20 acres, was compacted and covered with a paving of concrete slabs 16 ft square and 8 in. thick.

Finally from this reservoir the water is fed to the last downstream powerplant at Storo, which contains a single 22,000-kw unit operated by a turbine under a 310-ft head.

The Malga Bissina water, which started at an elevation of 5,900 ft, thus turns its last turbine at an elevation of 1,280 ft. Since the Chiese empties into Lake Idro, only 4 miles below Storo, the power potential of this Italian river is thus fully developed.

Speccheri Dam, 506 ft high, is Italy's second highest arch. It is of double curvature or dome outline, and was made completely symmetrical, even though it spans an unsymmetrical gorge. This was accomplished by filling the bottom of the gorge with a pulvino whose top was then shaped to take a symmetrical dam. Since the gorge-plug part of the pulvino is 180 ft deep, this reduces the height of the actual arch by that amount to about 325 ft.

The reservoir behind Speccheri feeds a 50,000-kw power plant that serves the city of Verona.

Toscalano Dam, a double curvature arch 375 ft high, requiring 300,000 cu yd of concrete, will, when completed, be a key element of a new pumped storage project. The dam is located about 5 miles back in the mountains from Lake Garda, and the power and pumping plant are on the shore of the lake. The maximum head for power generation will be 1,390 ft and the minimum pumping head 1,245 ft.

In the powerhouse the 75,000-kw generator, the turbine and the two-stage pump will be arranged vertically on the same shaft. When hydro power is being generated the pump will be disconnected, and when pumping is under way, usually at night, the turbine will be disconnected and the generator will be operated as a motor with power from existing thermal plants in the area.

It is estimated that the pumped storage power from this project will total about 250 million kw hr annually, while the streamflow storage will produce no more than 80 million kw hr per year.

South Italy Poses New Problems

Dam design and construction in South Italy—meaning broadly south of Rome and including the islands of Sardinia and Sicily—has presented difficulties of a different sort than have been conquered in the Alps. For one thing there was an almost complete absence of hydrological information—rainfall or streamflow—when the program in the south began less than 10 years ago. Also, the extreme irregularity of flow in the rivers has made it impossible to assemble reliable hydrologic data quickly. And the frequent occurrence of bad floods and high rainfalls—20 in. in 24 hr—has a sobering effect on design.

The geology of the region presents a second difficulty. The Southern Appenines are young mountains in which the hard rocks—granite, gneiss, micaschist and limestones—are badly fractured, and in which the softer materials—sandstones, conglomerates, marls and clays—appear in heterogeneous mixtures. Because the rivers have a short steep gradient in the mountains, they erode their beds and banks and deposit the sediments in their foothill courses or out on the plains. No matter where a dam is located, there is usually a poor footing to contend with.

Italy has not used earthdams, heretofore, but 18 of the 42 structures planned in the initial South of Italy program are scheduled to be of this type. The storage to be provided by these earth dams is just about one-third of the nearly 2 million ac ft of storage planned for the entire program.

Of the seven dams completed so far, two are earthfill, two are concrete gravity arches, one is a concrete gravity section, one is a rockfill and one is a concrete block type. Together they furnish 700,000 ac ft of storage.

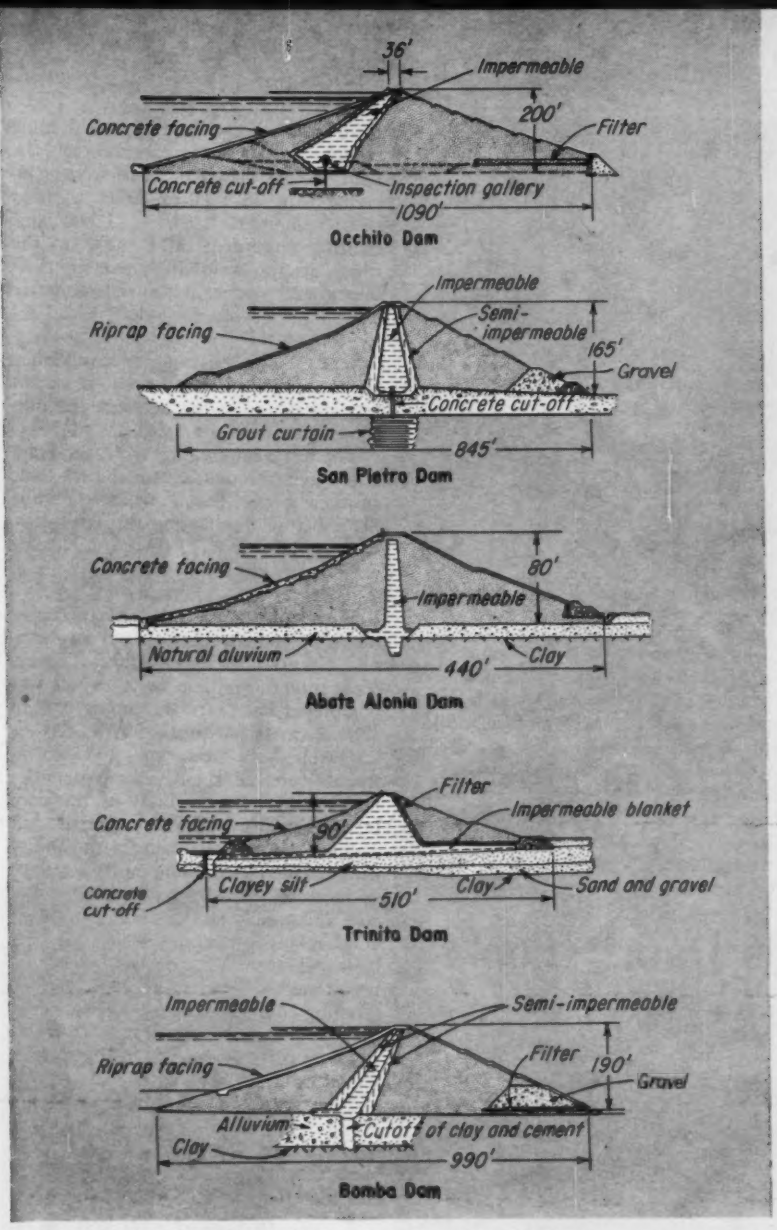
Seven other dams are under construction, which will provide additional storage of about 460,000 ac ft. They include four more earthfills, a gravity arch, a dome arch and a small gravity section equipped with movable gates.

Of the remaining dams in the program, 12 have been designed and are in various stages of the approval process, while 16 are still under design. None of the dams is notably large, and most are of small or medium size.

Occhito Dam is a 4-million-cu-yd earthfill, 200 ft high and 1,400 ft long, currently under construction. Its 270,000-ac-ft reservoir will store irrigation water for an area of 167,000 acres. The sloping core of the dam is constructed of a sandy silt, while the main fill is a sandy gravel. Foundation material at the valley sides is a hard marl, which is covered in the valley bottom by alluvial material to a maximum depth of about 70 ft. The cutoff in this alluvial material is a concrete wall connected at the top, through a plastic joint, to a transverse concrete inspection gallery in the core of the dam. The cutoff in the marl at the ends of the dam is supplied by a grout curtain.

It is planned to cover the upstream face of the dam with prefabricated concrete blocks.

San Pietro Dam is a 2 million-cu-yd earthfill, 165 ft high and 1,500 ft long, to store irrigation water. The dam has a vertical core below which is a concrete cutoff wall about 2 ft thick constructed in a trench kept filled with



VARIATIONS IN EARTH DAMS have been dictated by differing site conditions throughout southern and central Italy.

bentonite mud as it was dug by a clamshell bucket. Below the concrete cutoff a wide grout curtain was also installed. The sandy gravel and clay material of the dam fill is being compacted with a vibrating roller. The upstream facing will be riprap.

Abate Alonia Dam is one of four dams (San Pietro, above, is another) planned to impound the water of the Ofanto River and its tributaries for irrigating about 65,000 acres. It is a vertical-core earth dam 80 ft high and 4,259 ft long, containing about 1.5 million cu yd. A good foundation is provided by alluvial material over an impermeable formation of blue clay extending to a great depth. The vertical core of the dam penetrates into this blue clay so that no separate cutoff is required. The core was constructed of 20% gravel, 44% sand, 1% bentonite and 35% clay-silt. The main fill material is described as "a fine grained soil, yellow in color." The upstream face of the dam is paved with 3x6 ft concrete slabs 12 in. thick, cast in place on a foundation of stone rubble 4 ft thick.

Pietra del Pertusillo Dam, currently under construction, will be an arch-gravity structure, 310 ft high and 1,150 ft long, containing 500,000 cu yd of concrete. Its reservoir storage will be used for both hydro power and irrigation. The dam is built on a cradle-shaped concrete pulvino increased in size on the left bank to form an abutment. The vertical construction joints in the dam are continued down into the pulvino, which is also built with a central longitudinal joint because of its considerable thickness.

Ancipa Dam on the island of Sicily, is the largest and one of the first dams to be completed in the South of Italy program. In hydro and irrigation service since 1954, it is a hollow buttress structure 368 ft high, which makes it the highest dam of this type yet built. It is, however, only 830 ft long, compared to the 1,600 ft of Malga Bissina in the Alps.

Ancipa's nine buttresses, of isoceles triangle section, are 72 ft long at the base and similar in all respects to those at Malga Bissina. The dam is founded on a sandstone that had to be treated with large scale consolidation grouting, some of the holes being drilled as deep as 325 ft.

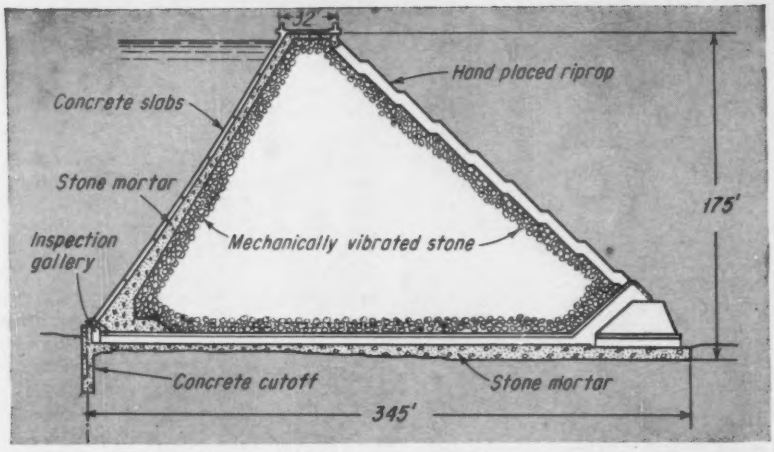
Trinita Dam, also in Sicily, is a relatively small earthfill, of 400,000 cu yd (90 ft high and 1,000 ft long) that incorporates an unusual arrangement of its impermeable portion designed to protect the foundations from reservoir seepage. In the first place the impermeable core occupies the entire middle third of the dam cross section; but in addition it rests on a blanket of the same impermeable material covering the entire area of the dam. At the upstream toe this blanket is also, in effect, turned vertical to form a cutoff wall. Further waterproofing of the dam is provided by concrete slabs placed on the upstream face.

Nuraghe Arrubiu Dam, often referred to as the Flumendosa Dam since it is located on the river of that name, is one of two large dams planned to give a powerful lift to the economy of the island of Sardinia. It is of arch-gravity type, 390 ft high, 1,000 ft long and it contains 440,000 cu yd of concrete.

The water from its 250,000 ac ft reservoir, in combination with a like amount of storage behind nearby Monte su Rei Dam, will be used to irrigate the only large plains area on the mountainous island, to supply the city of Cagliari with domestic water and to operate a 13,000 kw power plant.

Monte su Rei Dam on a tributary of the Flumendosa is an arch gravity structure 325 ft high, 900 ft long containing 320,000 cu yd of concrete. The principal purpose of its reservoir is to store excess waters released from the reservoir behind Nuraghe Arrubiu Dam, and release them to the Cagliari plain.

These two Sardinia dams, although the largest (along with Ancipa in Sicily) in the South of Italy program, involved only one special departure from the design and construction practices followed in the Alps for these types of structures. This relates to their flood



ROCKFILL CUGA DAM in Sardinia is enveloped along its foundation and upstream face by a waterproofing layer of stone mortar.

discharge capacity, which is one-third greater than the maximum flood of record. In the case of Nuraghe Arrubiu, taking into account spillways on either bank as well as an intermediate outlet in the dam and two bottom outlets, the total discharge capacity is in excess of 150,000 cu ft per second.

Cuga Dam, just completed in northwest Sardinia, is a 360,000 cu yd rockfill, 175 ft high and 720 ft long. It is built of trachyte rock mechanically vibrated into place in 3 ft layers by an 8 ton vibrator. The upstream face and the base of the dam consists of stone laid up in mortar to provide a waterproof encasement. In addition the upstream face is covered with reinforced concrete slabs. The downstream face, whose slope is interrupted by eight narrow terraces, is finished with handplaced stones.

Central Italy Needs Dams, Too

For some reason, probably by force of circumstances, central Italy (roughly between Florence and Rome and from coast to coast) has not been the scene of extensive dambuilding operations. When the government decided to promote industry and subsidize dams in the south it omitted central Italy on the grounds that its economy was not sufficiently depressed to warrant similar help. A good many Italians disagreed with this thesis. They find increasing support for their views as central Italy's share-cropping farm population leaves to find industrial jobs in the north and as some of central Italy's industries move south to be eligible for government subsidy.

Central Italy is sandwiched between the country's developing regions. It has nevertheless witnessed a few dam construction jobs, undertaken principally for hydro power.

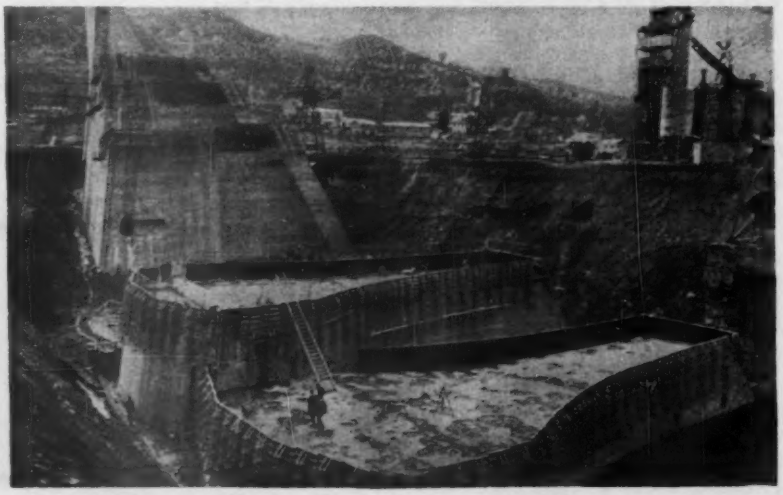
Corbara Dam, under construction, near Orvieto on the Tiber River, is a solid buttress dam, but it also includes a gated gravity spillway section in the middle and an earthfill on the left bank where foundation conditions were not suitable for a concrete structure. Of the total length of 2,100 ft, the buttress sections occupy 1,200 ft, the spillway 300 ft and the earthfill the remainder. The buttress section is 155 ft high.

Casoli Dam, on the east slope of the Apennines, is a concrete buttress type structure, 178 ft high and 635 ft long, built on a foundation consisting of tilted strata of limestone conglomerate and marls containing insertions of thin layers of clay and of sound limestone. Following excavation for the dam, 1 in. dia steel rods were concreted into 35 ft deep holes to hold these rock strata together. These bars, slanting upward at right angles to the tilted strata, were anchored at their upper ends in a reinforced concrete slab about 80 in. deep built as an extension of the dam apron. The footings of the dam buttresses were widened to make this apron continuous except for oval holes located between the buttresses to relieve any uplift pressure.

The water impounded by Casoli Dam is released through a tunnel that joins another tunnel from nearby Bomba Dam before discharging into the pressure conduit that feeds a 72,000 kw power plant.

Bomba Dam is a part of the same hydro project as Casoli. It is an earthfill, 190 ft high and 2,200 ft long, containing 5.6 million cu yd, which was completed last year. Its sloping core of alluvial material mixed with clay is sandwiched between up and downstream cores of slightly more pervious material. The main body of the dam is of bank-run alluvial material but selected to have increasing permeability toward the faces. The upstream face is protected with riprap. Below the core a clay and cement cutoff wall 80 ft deep is provided, except on the left bank where the dam rests on solid limestone and sealing was effected by grouting. A filter, built into the toe of the dam, is made up of five layers of material, and divided into compartments by concrete walls.

Construction of this dam was complicated by the presence on the right bank of landslide materials and outwash fans. About 1 million cu yd of this material had to be removed.



ONE OF THE FEW DAMS under construction in central Italy, Corbara will be of the solid buttress type. It is on the Tiber River.

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Architects & Engineers: Maurice H. Connell & Associates, Miami, Florida
General Contractor: Henry C. Beck Company, Palm Beach, Florida

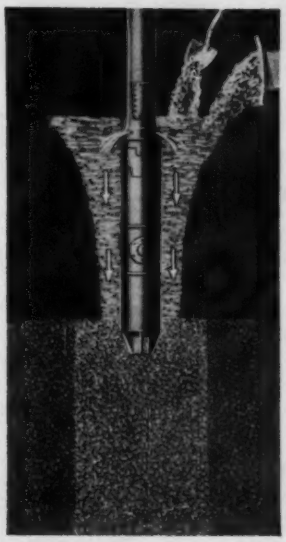

Diagram shows the lower end of a Vibroflot® machine in action to presettle sandy soil. Compaction is accomplished by a simultaneous saturation and vibration of the granular materials involved. During the application, fresh sand is added at the surface to compensate for the loss in volume caused by the increase in density (bearing capacity) of the compacted soil.

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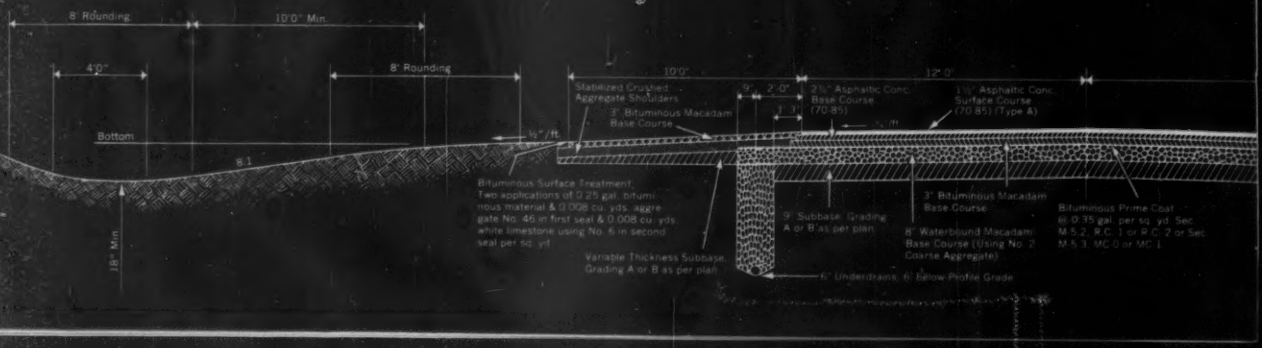
8' Rounding
10'0" Min.
4'0"
8' Rounding
Bottom
8:1
18" Min.
10'0"
Stabilized Crushed Aggregate Shoulders
3" Bituminous Macadam Base Course
½"/ft.
2'0"
1'0"
12'0"
2½" Asphaltic Conc. Base Course (70-85)
1½" Asphaltic Conc. Surface Course (70-85) (Type A)
Bituminous Surface Treatment. Two applications of 0.25 gal. bituminous material & 0.008 cu. yds. aggregate No. 46 in first seal & 0.008 cu. yds. white limestone using No. 6 in second seal per sq. yd.
Variable Thickness Subbase, Grading A or B as per plan
9" Subbase, Grading A or B as per plan
8" Waterbound Macadam Base Course (Using No. 2 Coarse Aggregate)
3" Bituminous Macadam Base Course
Bituminous Prime Coat @ 0.35 gal. per sq. yd. Sec. M-5.2, R.C. 1 or R.C. 2 or Sec. M-5.3, MC-0 or MC-1
6" Underdrains, 6' Below Profile Grade

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For good drainage, section was designed with a depressed median and a system of deep longitudinal drains on each side of travel lanes to prevent water from entering the foundation courses.

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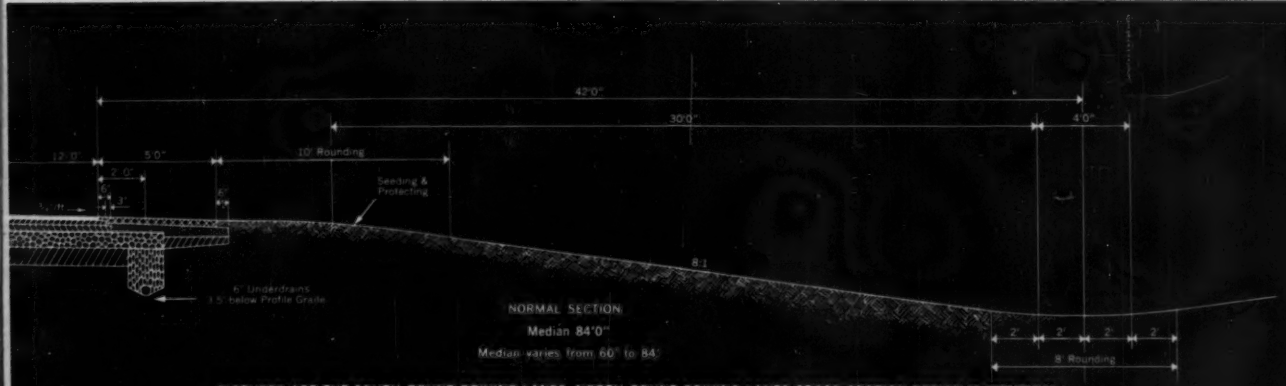

(PICTURED ARE THE SOUTH-BOUND DRIVING LANES. NORTH-BOUND DRIVING LANES CROSS-SECTION DESIGN IS IDENTICAL.)

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Shell reveals how a special additive in Shell Dieseline can help you cut downtime and maintenance costs

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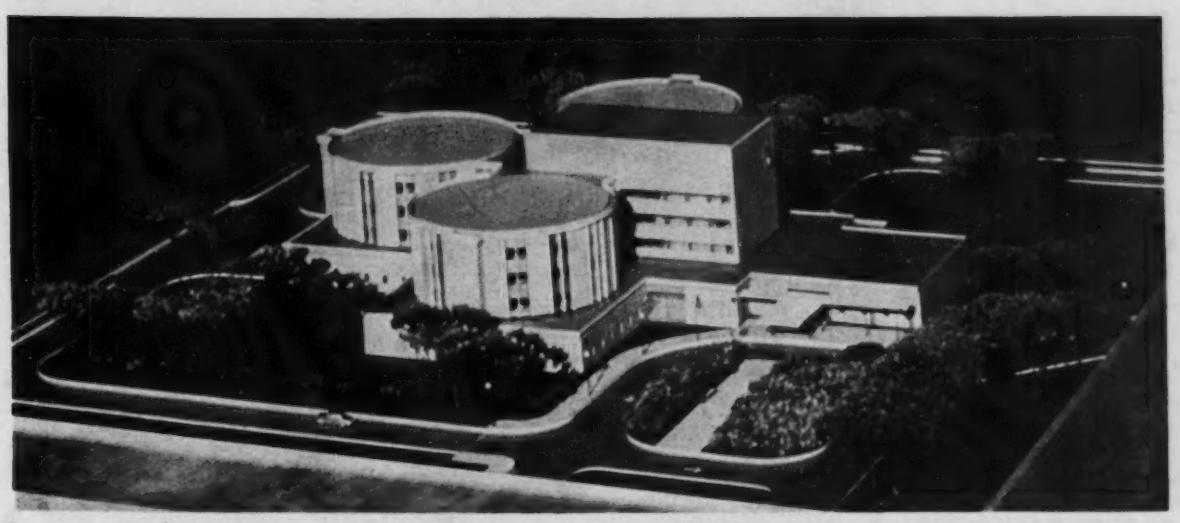


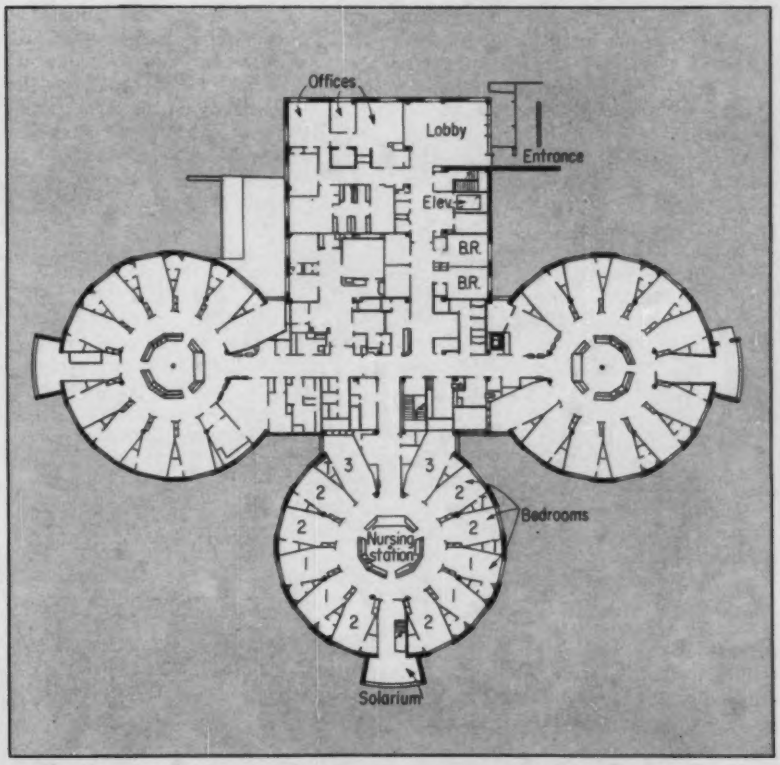
Because circular wings on a rectangular core improve efficiency . . .

Hospitals Adopt Clover-Leaf Plan

A new shape is attracting a great deal of attention in the hospital field. It's a clover leaf. It offers such great promise for improving efficiency of hospitals that hospital people enthusiastically declare it the most significant advance in hospital design in many years.

Key element in the design is a circular nursing unit with a nursing team in the center. Bedrooms surround it. From the station, the nurse can easily see every patient, and the walk to anyone needing attention is short. In plan, three or four circular units added to a rectangular core housing other hospital services form a clover leaf.

Circular nursing units offer these advantages: increased nursing effectiveness, increased physician-nurse efficiency, favorable patient reaction and an atmosphere of quiet. Relatives gain peace of mind on seeing that patients are under constant observation.



IN PLAN, circular nursing units clustered about service core form a three-leaf clover.

• **Aim is cost cutting**—The circular nursing unit had its origin in a meeting about five years ago in Rochester, Minn., of a group of dedicated people from medicine, education and patient care. They sought a basic change in hospital planning and operation. Object: to initiate a continuous improvement in efficiency and costs.

The original point of attack was the problem of nursing care, and in particular, the problem of special-duty nursing. A survey revealed one-fourth the total number of patients hospitalized at one time required special-duty nurses and the cost averaged more than $60 per day per patient. So the group initiated a study aimed at eliminating special-duty nurses from the field of general medical and surgical care.

The fundamental function of the special-duty nurse is constant observation of the patient. Recognizing this, the researchers soon reached the conclusion that her elimination could be achieved by a layout of the nursing unit that would permit a few highly trained nurses caring for several pa-

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CENTRAL STATION in nursing unit gives good view of patients, quick access to them.

tients to take over her tasks. This led to the circular form with the nurse in the center, able to observe every patient merely by turning her head.

The approach had sufficient merit to warrant construction of a unit and controlled testing. It was built four years ago with funds provided by the Louis W. and Maud Hill Family Foundation and the Ford Foundation.

The circular unit effectively concentrates all professional nursing activities in the center. Only heavy equipment, such as oxygen tents, are stored outside this unit. The nurse is able to carry out all her duties without leaving the unit. All patients are constantly within view, except when draperies are drawn over glass view panels in the doors for privacy.

• **Hospitals adopt concept**—Success of the experimental unit aroused broad interest. The conviction that the circular unit concept was adaptable to general hospitals led to construction of a general hospital with three nursing units at Stillwater, Minn. Designed by Saint Paul architects, Ellerbe and Company, it was completed last January.

Since that time, the Ellerbe firm has had over 20 hospitals on the drawing board or under construction with similar nursing units. Edwin Larson, in charge of hospital projects for the Ellerbe firm, says that the concept can be adapted to hospitals from 50 to over 500 beds, with gains in efficiency and esthetics.

The firm has found a very effective and remarkably flexible layout in the form of a clover leaf, with as many as four units placed in connection with a central rectangular core. The firm has planned all services normally encountered in the general medical and surgical fields with no loss in basic effectiveness. Also, it has been able to include all patient classifications—maternity, pediatric, acute, chronic, geriatric—in various combinations in hospitals with circular units.

• **One-story design**—The first hospital of this type, the Lakeview Memorial Hospital at Stillwater, is one-story high. It has a capacity of 68 beds but is designed for addition of 136 more on two added floors. The three circular nursing units are 84 ft in diameter.

The building is air conditioned and of reinforced concrete construction. Exterior walls are tile or concrete block faced with brick. Total floor area came to 55,565 sq ft. Construction cost averaged $22.84 per sq ft, $1.79 per cu ft, $18,670 per bed.

Mr. Larson points out that the basic nursing area of 817 sq ft per bed is somewhat more than per-bed areas of conventional designs with equivalent features. But the circular unit offers greater flexibility, and it costs no more per bed than conventional layouts.

Mr. Larson has this to say about operating costs: "We have no factual record of the current operating costs at Lakeview. Actually, the hospital has been in operation only since January, and no reliable experience factor has been established. Further, the operating policies of the unit are still in a state of flux. We do feel that if optimum methods prevail over an extended period, a definite operational advantage will be demonstrated."

• **Multistory design**—The Ellerbe firm also designed the Scott and White Memorial Hospital, a six-story building, with three nursing units, in the form of a clover leaf, now under construction at Temple, Texas. Two of the nursing units have private rooms and one unit has two-bed room accommodations. The hospital may be expanded to ten stories. It is designed for ambulatory, acute and constant-care patients.

This building now contains 285,000 sq ft of floor area. The main section is 300 x 230 ft. The structural frame is reinforced concrete; exterior walls are brick and metal panels. The six-story building will be completely air conditioned.

The circular nursing unit is no panacea, Mr. Larson admits. But its development and incorporation in the clover leaf concept is considered an important advance in hospital design.

The mountains were surrounded by armies of trees and the poles had to be set on the peaks

For the past two years, a Sikorsky helicopter has been used to hoist and truck transmission poles over the wilds of Puerto Rico instead of through them. No time was lost chopping through the woods. No bulldozing of roads. No heavy investment in road equipment and crews. Instead, the poles were lifted over the trees by a Sikorsky helicopter. That's what the Puerto Rico Water Resources Authority recently did. For example, a 7-mile line was completed by the helicopter in a bare nine weeks. In Puerto Rico, setting and stringing that line by conventional methods would normally take an estimated 78 weeks. And there were savings in dollars, too, with reduced operating expenses.

A Sikorsky helicopter can save time and money in difficult terrain. It can also eliminate the problem of clearing a right of way and building expensive access roads necessary for vehicles in any terrain. A Sikorsky representative will be glad to help you analyze your own operation to see if you can benefit from a helicopter. Why not write today on your letterhead?

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International

Tall Office Rises at Pall Mall

London's historic Pall Mall will soon sport a 15-story office tower set atop a four-story podium. Dwarfing the grand old Majestic Theatre, the $5-million building will house all London offices of the New Zealand Government.

New Zealand House will have an internal court on the podium's highest floor, provide parking for 70 cars in the basement, and offer 200,000 sq ft of office space.

Designed for reinforced concrete, the New Zealand House will rest on forty-eight 64-ft-dia concrete piles, driven 110 ft below grade.

Circular columns will bear the floor load at the outside perimeter of the main tower and the podium. The columns, 5 ft inside the glass-and-aluminum wall enclosure, will be clearly visible from outside. Two reinforced concrete elevator shafts provide additional support for tower floors.

An air distribution system runs along the outside edge of each floor. Frames for the double-glazed windows will go in as the floors are completed and before air conditioning is installed.

Glass panes weigh 1,600 lb, measure 22 x 9 ft. There will be no opening windows. Facing for the tower and podium is Portland stone, except for the ground floor, which is faced in black granite.

Framing of the podium and almost half of the tower has been completed. All work is scheduled for completion by June 1962.

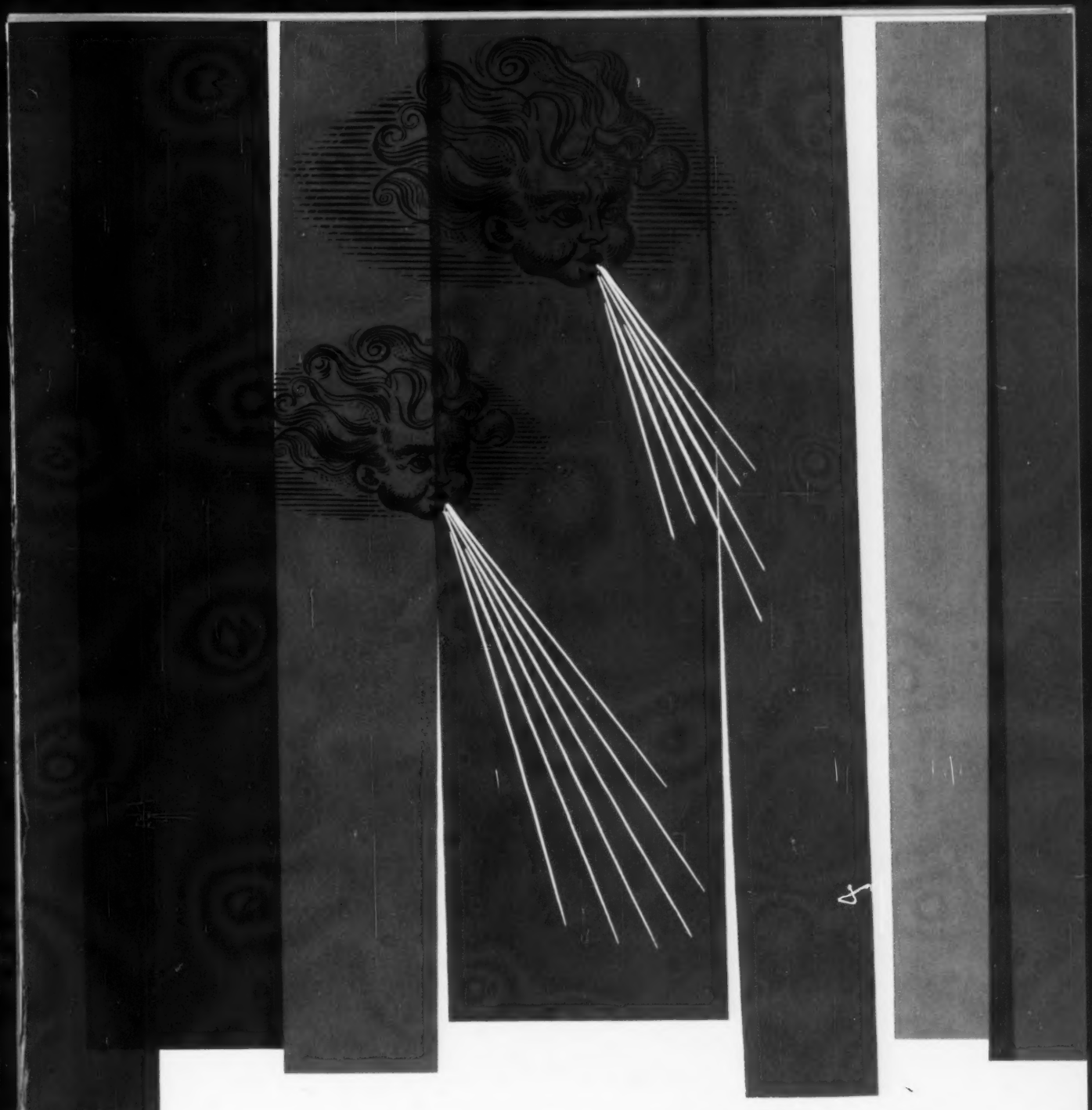
Architects are Robert Matthew and Johnson-Marshall; contractor is Holland and Hannen and Cubitts. All are of London.

Corrosion Hits Aluminum Prefabs

About 13,400 prefabricated, one-story aluminum houses in Great Britain, erected ten to twelve years ago, may have to be dismantled. Corrosion has eaten into extruded components, causing premature deterioration.

The houses, with an expected life of 60 years, were built by the Ministry of Housing of scrap aluminum with a composition roughly the same as British alloy DTD 479. This alloy, says an official of H. M. Building Research Station, is not suitable for extrusion; so the extruders were authorized to add either 10% or 35% of aluminum to the alloy. They produced both compositions, and both have been attacked by corrosion. But the main panels, to which no aluminum was added, have not been affected.

The reasons for the corrosion are unknown. The deterioration is laminar; it proceeds in the direction of extrusion and occurs at grain boundaries. Location is not a major factor, since the houses are in rural and urban areas.



A special report on

ARMSTRONG VENTILATING CEILINGS

A remarkable new plenum-engineered ventilating system

ARMSTRONG VENTILATING CEILINGS

their advantages

1. A completely proven ceiling ventilating system

This new air-diffusion system is essentially an air-inlet system, employing a ceiling with thousands of perforations through which conditioned air is pushed from the plenum. Armstrong Ventilating Ceilings have been thoroughly lab- and job-tested. The engineering bases for this new kind of ventilating system have been fully developed for virtually all types of structures. Ventilating Ceilings have been used by a number of architects in a variety of different jobs. One of them—the Battle Creek Country Club—is shown at right. Some other recent jobs are listed on the last page of this report.

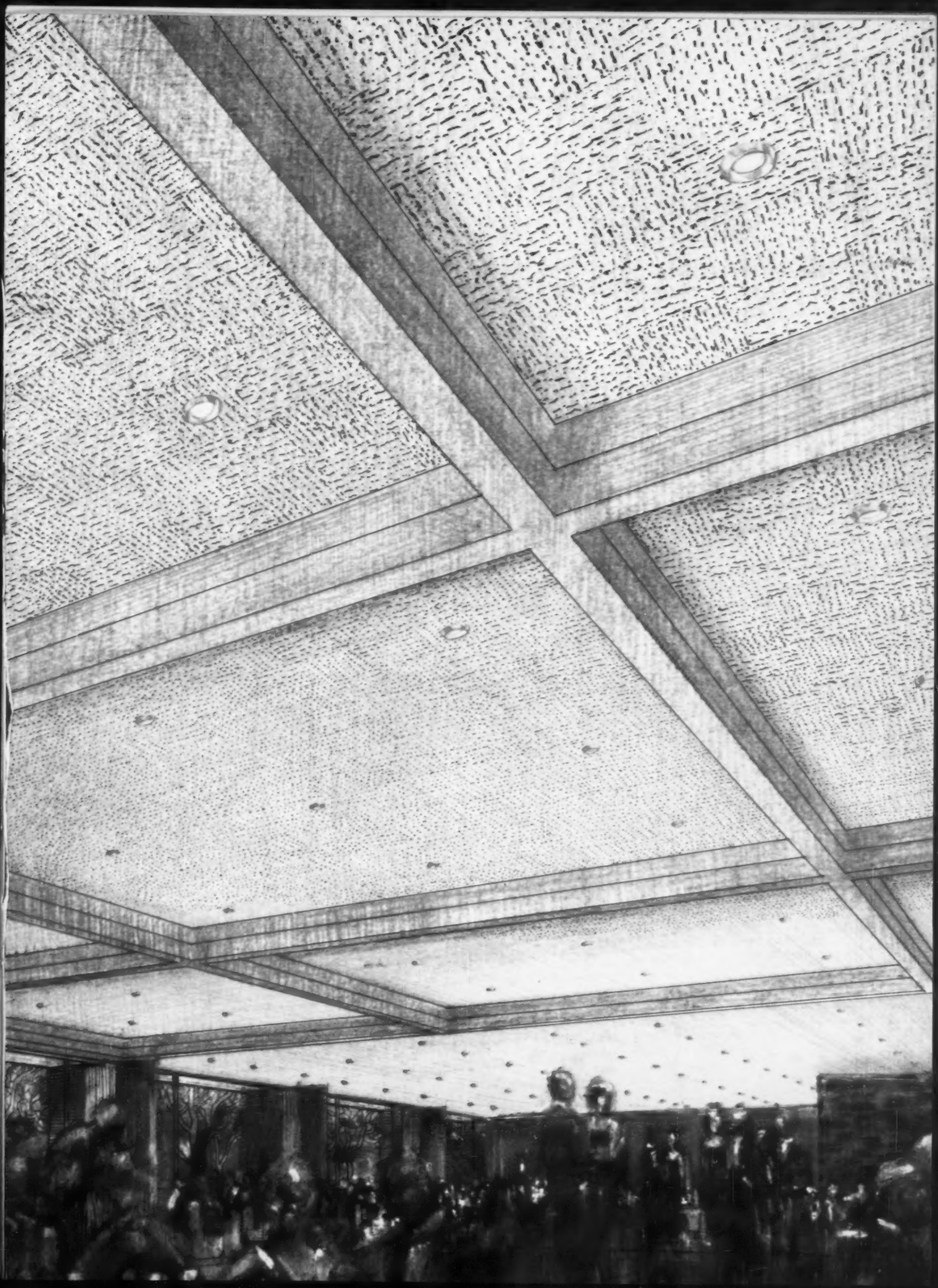
2. Shaves construction costs, cuts ductwork, eliminates diffusers

An Armstrong Ventilating Ceiling performs three essential functions: air diffusion, sound absorption, decoration. And when you use Armstrong Fire Guard in a Ventilating Ceiling, you can add a fourth function: time-design-rated fire protection. Since the plenum chamber acts as the room duct in an Armstrong Ventilating Ceiling, and since one duct stub is sufficient for most plenum chambers, much of the supply ductwork is eliminated. So are the diffusers, because the ceiling itself serves as the diffuser. In both new construction and remodeling, these two things alone offer appreciable cost savings. An Armstrong Ventilating Ceiling often permits the use of a shallower plenum than the conventional air-inlet system. This, too, saves money, by enabling you to have the required number of floors with less total building height.

3. Provides a handsome acoustical ceiling

Because an Armstrong Ventilating Ceiling eliminates the need for diffusers—or other noticeable air openings—it provides new opportunities for creative effects. In the Battle Creek Country Club, shown at right, the architects have created distinctive character with a giant-coffered ceiling, incorporating Ventilating Tile. In each tile, the tiny ventilating perforations account for two per cent of the surface. And they're virtually invisible, because they're part of the over-all pattern. Ventilating Ceilings are available in a number of different designs, in both tile and lay-in units, so you can select the one that best meets your aesthetic needs.

Renderings by Ara Derderian



ARMSTRONG VENTILATING CEILINGS

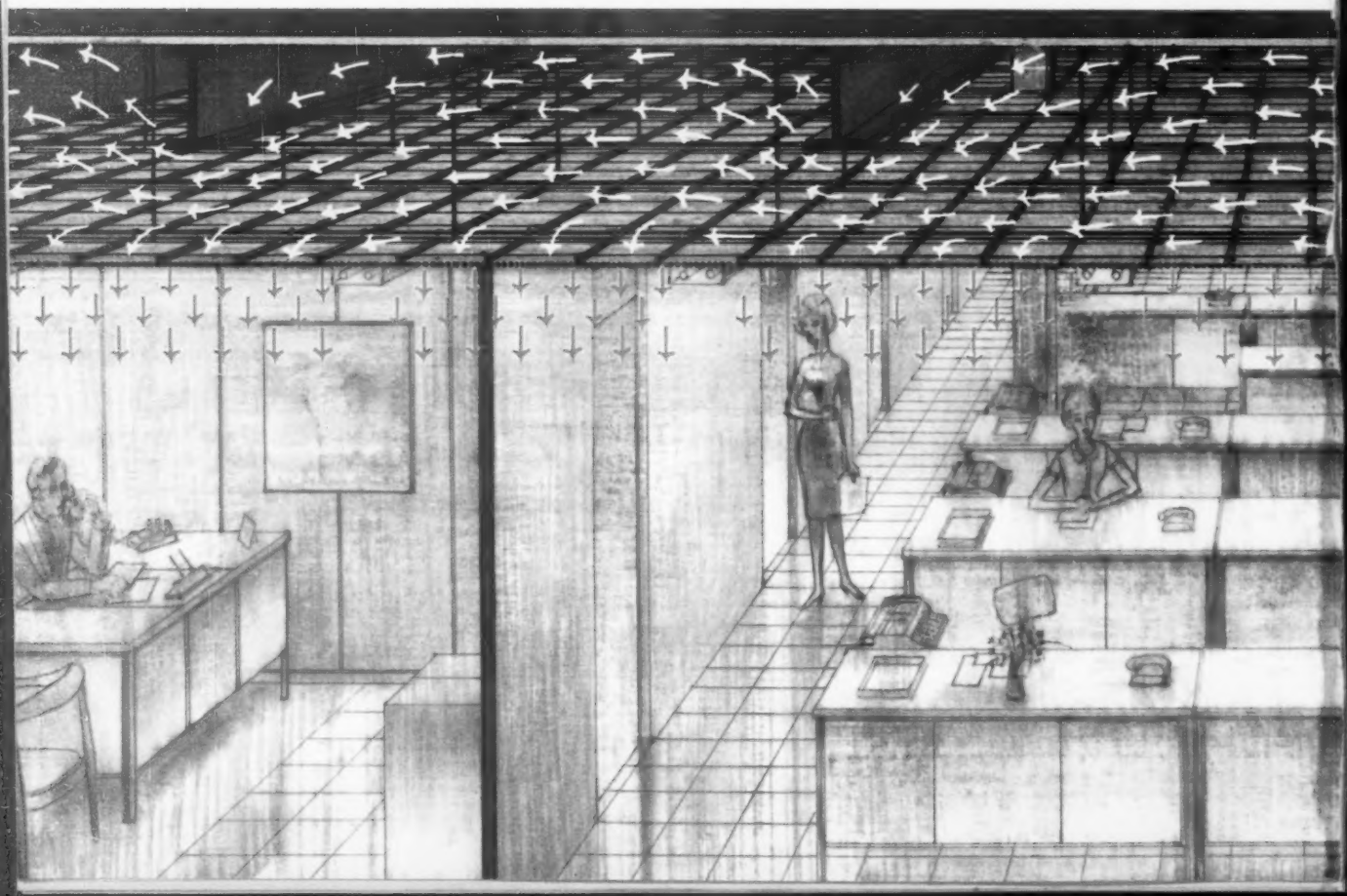
their functions

1. They air-condition—providing uniform air diffusion

Since the ceiling itself serves as a diffuser, an even flow of air is provided into and throughout the room. An Armstrong Ventilating Ceiling enables you to eliminate drafts and stagnant areas. Even in low-ceiling areas, draft problems can be eliminated. The picture below of a section of an office building shows how conditioned air is forced, under pressure, from the central unit through ducts to the duct stub supplying each plenum chamber. The result—comfort for all occupants.

2. They're self-cleaning—the down pressure provides a perpetual barrier against dirt and dust

Besides cooling or heating, the air forced through the perforations in an Armstrong Ventilating Ceiling repels dust and dirt, since there is a continuous flow of air flowing downward from the ceiling. The ceiling is, in effect, self-cleaning.

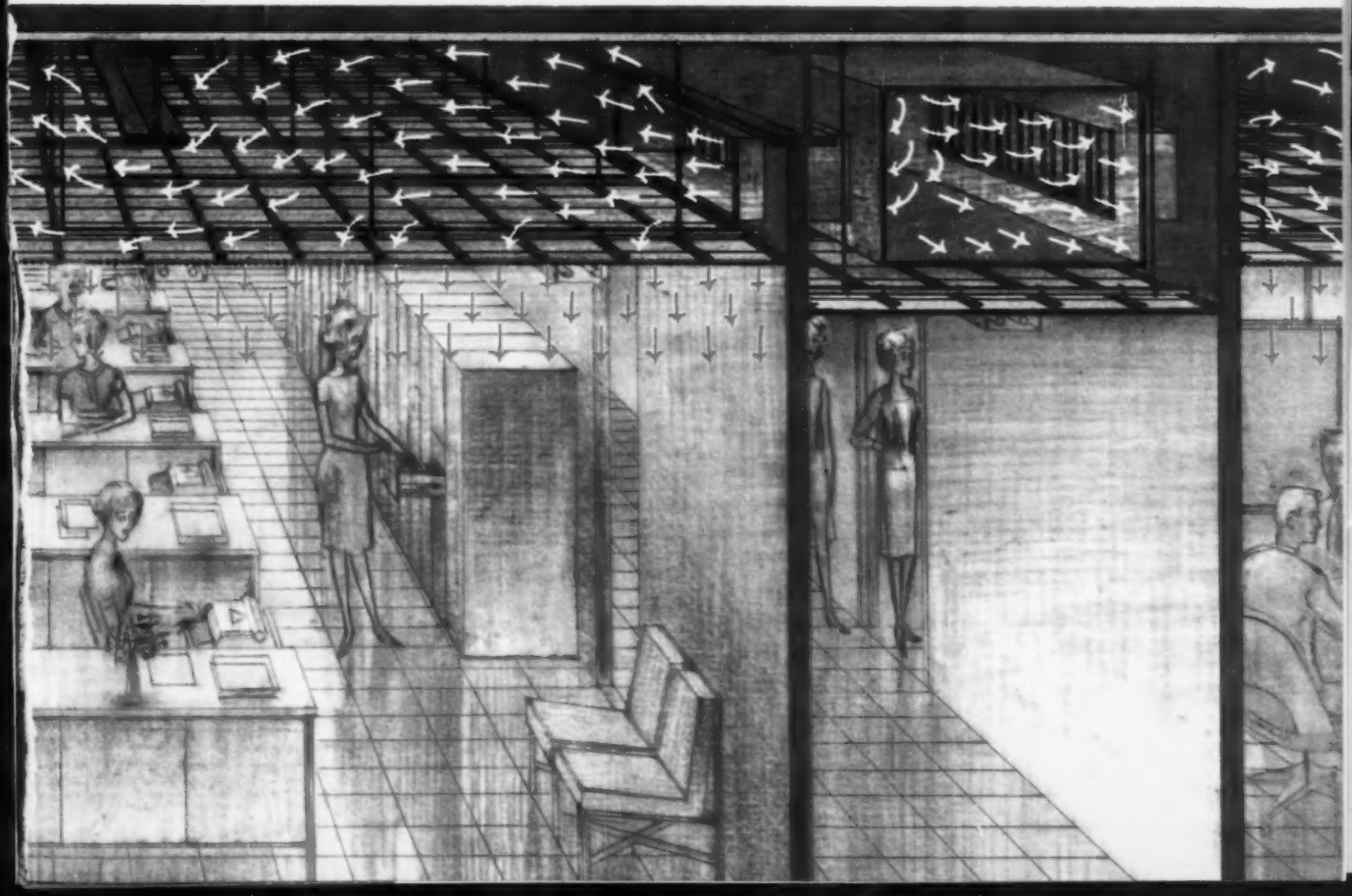


3. They're acoustical—hushing room noises, muffling air-conditioning sounds

Armstrong Ventilating Ceilings have the same high acoustical properties as other Armstrong Acoustical Materials. Noisy air diffusers are, of course, eliminated. And the suspended ceiling separates occupants from any noise that might be transmitted through air-conditioning supply ducts.

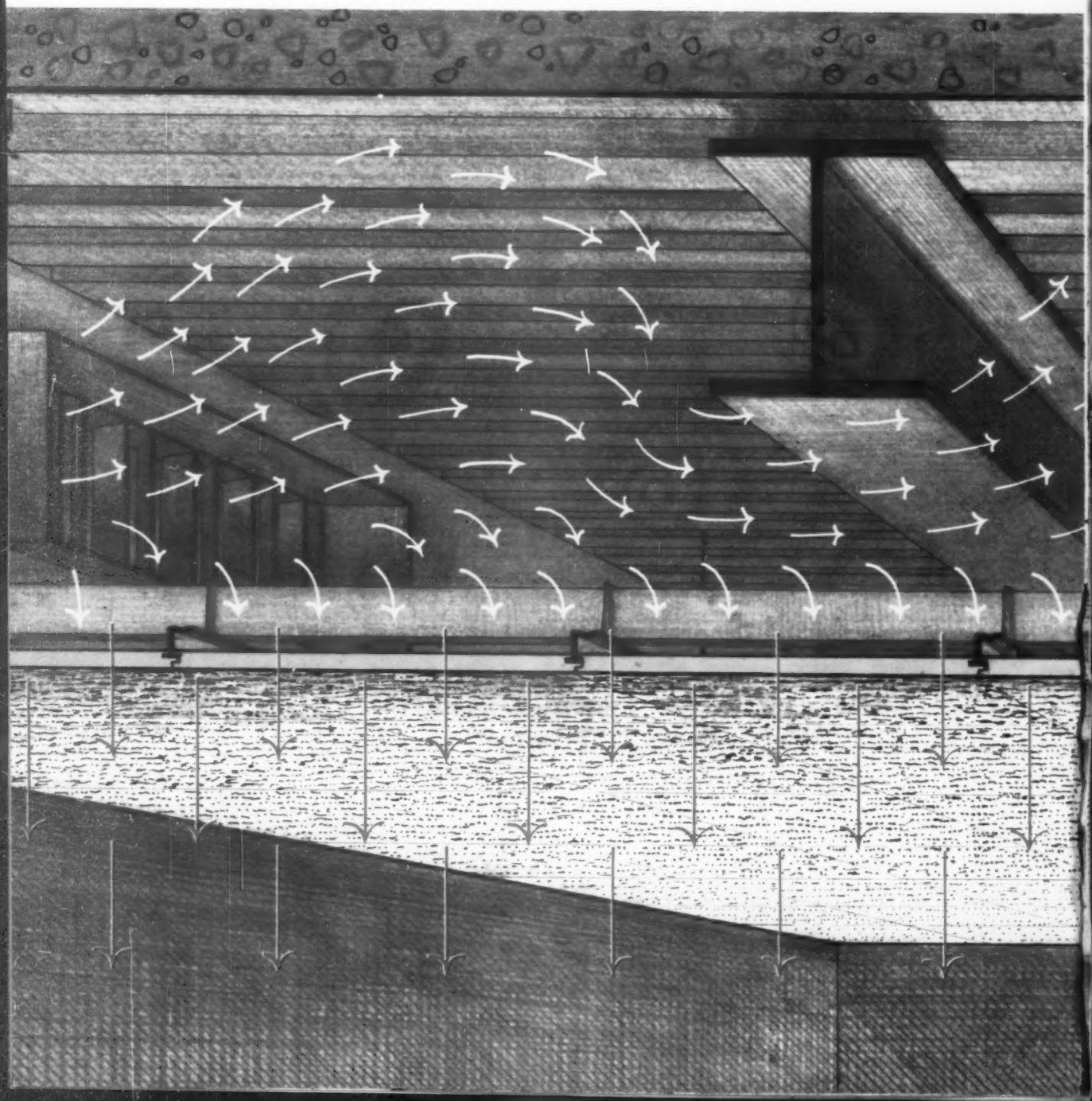
4. The ventilating ceiling can incorporate time-design-rated fire protection

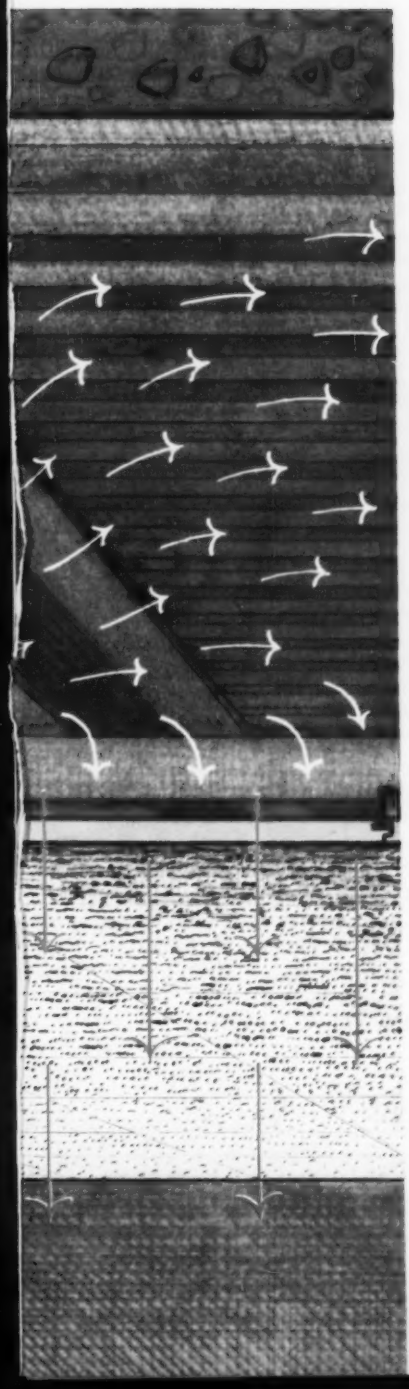
Armstrong Acoustical Fire Guard is available for use in Ventilating Ceilings. Floor-ceiling assemblies, using Ventilating Fire Guard throughout the ceiling, have been tested at Underwriters' Laboratories. The tiny ventilating perforations in the ceilings accounted for over-all open areas of two per cent. Beam-protection ratings up to four hours have been obtained for Ventilating Fire Guard Tile (UL Report 4177-6), and up to three hours for Ventilating Fire Guard Lay-In (UL Report R-4177-7).



ARMSTRONG VENTILATING CEILINGS

their technology





1. The plenum chamber acts as the duct... the ceiling acts as a diffuser

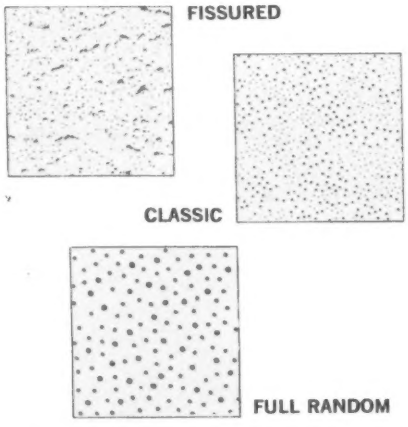
This system is remarkably simple in principle. As the sketch demonstrates, conditioned air enters the plenum chamber through the supply-duct stub by a low-pressure air-inlet system. It is dispersed throughout the chamber and is forced down through the ceiling into the room. Any conventional return-air system may be used with Armstrong Ventilating Ceilings. The system has proven very effective even in large plenum chambers. For example, in one installation, air was projected across 80′ in a 22″ plenum (despite the obstruction of 14″ I-beams) and achieved uniform distribution in the area below.

2. Special plenum-engineering data available

This data provides all the necessary factors and formulae for the correct design and engineering of plenum chambers where Armstrong Ventilating Ceilings are used as the air-inlet system. This step-by-step procedure has been specially developed for the use of ventilating engineers, and is available through your Armstrong Acoustical Contractor or Armstrong District Office.

DATA ON ARMSTRONG VENTILATING CEILING MATERIALS

For complete information on Armstrong Ventilating Ceilings, call your Armstrong Acoustical Contractor or one of the Armstrong Offices listed below. Or write to Armstrong, 4200 Miller St., Lancaster, Pa.



Travertone.

12"x12" fissured, mineral-wool tile, with square or beveled edges.

Minatone.

12"x12" mineral fiber tile in the Classic and Full Random designs, with beveled edges.

Minaboard Lay-In.

Nominal 24"x24" and 24"x48" units in the Full Random and Classic designs for exposed grids.

Fire Guard.

12"x12" fire-retardant tile in the fissured, Classic and Full Random designs with beveled edges.

Fire Guard Lay-In.

Nominal 24"x24" and 24"x48" units in the Classic design for Fire Guard grid.

Travertone, Minatone® and Minaboard® are trademarks of Armstrong Cork Company.

Some recent installations of Armstrong Ventilating Ceilings:

Battle Creek Country Club, Battle Creek, Mich.
architect: Haughey, Black and Williams, Battle Creek
mechanical engineer: Meckler Engineering Co., Toledo, Ohio
general contractor: Phelps-Wagner Builders, Battle Creek
acoustical contractor: B. C. Schuemann Co., Battle Creek

Dinwoodey Furniture Company, Salt Lake City
architect: Snedaker-Budd-Monroe & Associates, Salt Lake City
mechanical engineer and contractor: Richard C. Brown, Mayne Plumbing and Heating, Salt Lake City
general contractor: Cannon Construction Co., Inc., Salt Lake City
acoustical contractor: Utah Pioneer Corp., Salt Lake City

Northern Federal Savings and Loan Association, St. Paul, Minn.
architect and ventilating engineer: Associated Architects and Engineers, Inc., St. Paul
mechanical contractor: Pierre Aircon Co., St. Paul
general contractor: William Baumeister Construction Corp., St. Paul
acoustical contractor: St. Paul Linoleum and Carpet Co., St. Paul

Arizona Bank, Home Office Motor Bank, Phoenix
architect: Lester Byron, Phoenix
general contractor: Ray P. Petersen Contractor, Inc., Phoenix
acoustical contractor: Barrett-Homes Contractors, Phoenix

Armstrong General Office Building, Lancaster, Pa.
consulting engineer: Charles S. Leopold, Inc., Philadelphia
mechanical contractor: B&G Olsen Co., Inc., Richmond, Va.
acoustical contractor: Berger Acoustical Co., Inc., Haverford, Pa.

Lit Brothers Restaurant, Philadelphia
architect: O. L. Fallan, AIA, Philadelphia
chief designer: John Jones, Philadelphia
acoustical contractor: Berger Acoustical Co., Inc., Haverford, Pa.

John Deere Office Building, Moline, Ill.
architect: R. B. DeJeager, company architect, Moline, Ill.
ventilating engineer: Ward Jensen, company engineer, Moline
general contractor: Axel Carlson Company, Moline
acoustical contractor: Builders Sales & Service Co., Moline

4747 Building, Phoenix
architect: Ralph Haver & Asso., Phoenix
mechanical engineer: Lowry & Sorensen, Phoenix
general contractor: Gilbert & Dolan, Phoenix
acoustical contractor: Barrett-Homes Contractors, Phoenix

St. Paul's Church Home, Inc., St. Paul, Minn.
architect: Buetow and Associates, St. Paul
mechanical contractor: Healy Plumbing & Heating Co., St. Paul
general contractor: J. S. Sweitzer & Son, St. Paul
acoustical contractor: St. Paul Linoleum and Carpet Co., St. Paul

Armstrong offices

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727 West Peachtree St., N.E.
TRinity 5-7201

BOSTON, MASS.
200 First Avenue, New England Industrial Center, Needham Heights 94. HIllcrest 4-5700

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CLEVELAND, OHIO
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KANSAS CITY, MO.
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RAymond 3-9381

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PHILADELPHIA, PA.
301 City Line Avenue, Bala-Cynwyd. TEnnyson 9-6640

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Armstrong ACOUSTICAL CEILINGS

Colombia Road Net Gets $39-Million Financing

The World Bank and its affiliate, the International Development Association, will provide $39 million to Colombia for highway improvement and maintenance. A World Bank loan and an IDA credit will each total $19.5 million.

The funds will aid in reconstruction or new construction of about 800 miles of main roads in the South American country; preparation of plans for about 300 miles of new roads; a reappraisal of maintenance operations and procurement of maintenance equipment.

The World Bank made three earlier loans for highway development in Colombia. They totaled $47 million, of which $3.1 million was used for road maintenance.

A large part of the money now made available will go to complete about 450 miles of roads started with the help of previous World Bank loans. About $7.6 million of the Bank loan will cover the cost of additional maintenance equipment to meet immediate needs and a reappraisal of Colombia's maintenance operations.

Construction and maintenance work now being undertaken will take four years to complete at a total cost of about $100 million.

The Bank loan and IDA credit will cover foreign exchange costs and the government of Colombia will meet local currency requirements.

Construction contracts will be awarded and purchases of equipment made on the basis of international competitive bidding.

This is the third IDA credit in Latin America. Earlier credits were also for highway development—a $9 million credit to Honduras and a $19 million credit to Chile.

The credit to Colombia is for a term of 50 years, interest-free. It is repayable in foreign exchange, amortization to begin in 10 years.

The World Bank loan is for 15 years, interest rate 5¾%. Amortization will begin in September, 1965.

British Research Unit Develops King-Size Brick

Britain's Building Research Station at Garston is developing a range of extruded bricks to simplify cavity-wall construction. Type V5 is the same weight but twice the width of a standard brick. With it, the equivalent of a two-leaf cavity wall can be built in one operation. Also under development is a larger sized cellular brick, 13½x9x3 in., Type V7.

HOW TO REDUCE NON-PRODUCTIVE MAN HOURS with WAYNE POWER SWEEPING!

CASE HISTORY #27

CONTRACTOR: H. K. Ferguson Co., Cleveland, Ohio
JOB: Allis-Chalmers Manufacturing Co., Harvey, Illinois Works (515,000 sq. ft. Engine Manufacturing Plant)
JOB SUPERINTENDENT: Harry Stern, Jr.

In February, H. K. Ferguson Co. purchased a Wayne Model 706 Power Sweeper for use in keeping the construction area cleaned of nails, bolts, metal scrap, rocks, gravel and other debris hazardous to construction crews and damaging to green concrete and mobile equipment. Here's what the job superintendent says about his Wayne ...

"By using the Wayne Sweeper we considerably reduce the number of non-productive man hours required to do the job by hand. Not only do we do it faster, but we do it better. We therefore are able to use our skilled construction crews on the job, rather than pushing a broom. This means construction moves along at a faster pace ... when you save time, you save money, and the Wayne Power Sweeper does this for us every day.

"When the job is completed, the Wayne Sweeper will become the property of Allis-Chalmers for use in and around the plant. This will enable Allis-Chalmers to keep the plant "like new" for many years."

(signed) Harry Stern, Jr.
Job Superintendent

Here is just one more example of how a Wayne Power Sweeper not only gets the work done—*but can often pay for itself on the first job!*
Find out the facts for yourself before your next construction contract —write for descriptive literature!

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HURON CHOSE PRECAST

Concrete Structurals By A-M

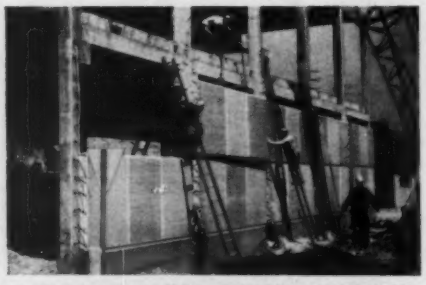
Architectural & Engineering Design by:
Herbert Fleischer, P.E.,
254 5th Ave., New York City

Economy, as well as speed of erection, were important considerations in the planning of this new office and laboratory addition of Huron Portland Cement Company at their Alpena, Michigan plant. That's why American-Marietta *precast* concrete structurals were chosen for the job.

The precast structural contract—including precast grade beams, columns, wall panels, beams, floor and roof slabs—was substantially completed 18 weeks after the date of its award.

If you are planning the construction of industrial buildings and warehouses, schools, offices or apartment buildings it will pay you to investigate the many advantages of specifying American-Marietta *precast* concrete structurals. Write today for illustrated literature.

The columns in Huron's 25,000 sq. ft. building are 15" x 16" in cross section by 28'-5" high (two stories).



The American-Marietta wall panels are 6" thick solid panels with a broomed surface exterior finish.

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AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

New Products

Under-Slung Motor Makes Drill More Efficient

A ¼-in. masonry hand drill, called the Dirk, has its 3-amp, 1,800-rpm motor slung at right angles to the drilling axis.

Because the center of gravity is thus placed below the axis of the hand, the bit and the hole to be drilled, the manufacturer reports that the Dirk produces less wobbling, less bit breakage and round—not oval—holes. Disston Division, H. K. Porter Co., Inc., Porter Building, Pittsburgh 19, Pa.

Rubber and Steel Fender Available in Ten Sizes

A simple, inexpensive fender is now available for use on piers and wharves and on turning and breasting dolphins. Called the Lord Dock Fender, the unit consists of a modified natural rubber center-block bonded at each end to steel mounting plates and coated with neoprene for resistance to corrosive action of air, water, oils and chemicals.

Ten sizes of fender are available. The smallest, which has a shock absorption capacity of 6,900 lb weighs about 75 lb. The largest, which has a shock absorption capacity of 53,000, weighs about 450 lb.

According to the manufacturer, the units are easy to install, readily accessible for inspection and require little maintenance. Lord Mfg. Co., Erie, Pa.

Shock Absorber Device For Scraper Push-Loading

Hydra-Bumper, a shock absorbing device for scraper-tractor push loading, is mounted on the scraper push block.

Two hydraulic cylinders act independently to cushion impact and permit the tractor to work at any angle up to 30 deg off center. Hydra-Bumpers work without the removal of tractor-mounted pushing attachments according to the manufacturer. Hydra-Bumper Co., P.O. Box 775, McPherson, Kan.

THE SURVEYOR'S NOTEBOOK

Optical Plummet Transit Replaces Theodolites on Tough Jobs at Plattsburgh Missile Base

"As you may have guessed, we've had some really rugged and unusual problems building the Plattsburgh (N.Y.) Missile Base," says Leigh French, Chief Field Engineer for Raymond-Kaiser-Macco-Puget Sound (A Joint Venture), contractors on the job. "No matter what unique surveying problem is involved, we have the added headache of exceptionally close tolerances—often to 1/16 or 1/32 of an inch. Needless to say, that is unusually accurate for construction work.

Leigh French (l.), Adolph Vaal on instrument platform with their Optical Plummet Transit.

"In building 200-foot underground 'silos', which house Atlas F guidance systems, we first tried imported theodolites but found we couldn't get the length of focus that was required. Adolph Vaal, my instrument man on sight tube setting, was acquainted with the Gurley Optical Plummet Transit and suggested we try it. Now the theodolites are gathering dust back in the office.

"In using the Gurley 'OP' in this work, we often have to set up on platforms over points which are 10 to 20 feet below the instrument on the center line of the sight tube. The Gurley Shifting-Head Tripod helps us to get into alignment fast. These sight tubes must be carefully set to an angle of 49°30', so accurate vertical angles are required. The level on the telescope makes it possible to adjust and check the vertical circle verniers quickly and easily by merely leveling the telescope.

"With all the wild winds up here, we're particularly happy not to have to worry about a flapping plumb bob. Adolph Vaal tells me he feels 'safer' using the 'OP' than any other instrument he's tried; says it's 'more rugged... doesn't get out of adjustment... everything can be seen instantly.' One time a 70-mile-an-hour gale knocked the Gurley down and it was still in perfect adjustment. And even in 45-below-zero cold, a complete check and adjustment can be made in the field in under five minutes.

"At the moment we're working in quicksand; but we know we can count on the Gurley 'OP' to pull us out."

You, too, can count on the Gurley Optical Plummet Transit to pull you out when you have tough assignments. **Available in 21 combinations. Write for further information.**

Setting the steel in the "silo" cap.

W. & L. E. GURLEY

Union Plaza, Troy, N. Y.

GURLEY Surveying and Scientific Instruments

"Our 48 Ford Trucks have given maximum economy in every way!"

says Fred Newkirk, Manager of Materials Transportation Company, Inc., Corpus Christi, Texas

"We are using Ford Trucks exclusively because they provide important savings—starting with a lower initial expenditure. We estimate that each Ford costs us about $1,500 less than other makes of comparable size and capacity. Our maintenance and repair costs are less, too. The greater parts interchangeability on Ford Trucks makes it possible to reduce our parts inventory by about 50%; this frees $2,500 of working capital. And in operating expenses, we save on gasoline because our Fords deliver an extra ½ mile per gallon.

"They have proven more durable, too. For example, our 1958 Ford F-1000 has logged over 160,000 miles without even having the heads or pan off. We expect 200,000 miles from these Super Duties before a major overhaul. Some of our 1955 and 1956 Ford F-900's still have their original brake linings after 300,000 miles.

"Our trucks operate six days a week, and the average fleet mileage is 51,000 miles per week. We haul 48,000-lb. payloads of bulk cement or 37,760-lb. payloads of sack cement for Halliburton Portland Cement Company. Our drivers are also very enthusiastic about these new Ford Super Duties. They report that with 72,000-lb. grosses Fords are smooth riding and easy to handle."

Solid testimony that Ford's full-time economy only starts with low price!

FORD TRUCKS COST LESS

PRODUCTS OF Ford MOTOR COMPANY

HALLIBURTON
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if
you pour
concrete,
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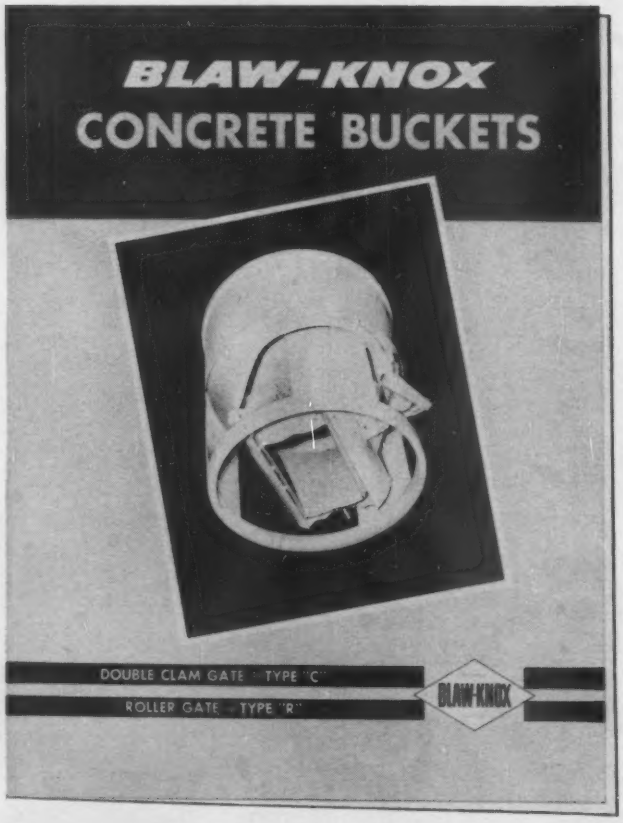

You should have these latest detailed specifications on Blaw-Knox controllable discharge concrete buckets in your file. They cover double clam gate and roller gate types. Sizes are ½-yd. to 8-yd. capacities.

Discharging into narrow forms? Placing low slump concrete? Whatever the job calls for, Blaw-Knox can solve your placement problems.

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Bulletin 2070-R1—The Blaw-Knox Company, Pittsburgh 38, Pennsylvania

BLAW-KNOX
BUCKETS

BLAW-KNOX

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New Product Briefs

Plastic-Lined Plug Valves

Rockwell Mfg. Co. has introduced a line of plastic-sleeved plug valves, teflon on low-pressure valves, phosphate molybdenum disulfide on high-pressure valves. ROCKWELL MFG. CO., 400 N. LEXINGTON AVE., PITTSBURGH 8, PA.

Insulation

Speed-Insul Panels of aluminum sheets and insulation. For weather-resistant facings. Coverage of 4 x 8 ft per sheet, when overlapped. All panels predrilled; fasteners supplied. Can be cut and drilled on job. JOHNS-MANVILLE, INSULATION DIVISION, 22 E. 40 ST., NEW YORK 16, N. Y.

Hard Hats

Topgard safety hats. Of molded polycarbonate that retains flexural strength from —100 F to 270 F. Double cradle has tamperproof upper cradle that insures 1¼-in. minimum crown clearance. Lower cradle adjusts to fit the head. Meets Federal Spec. GGG-H-142b, and ASA specs. In nine colors. MINE SAFETY APPLIANCES CO., PITTSBURGH.

Welding Helmets

Line of glass-fiber welding helmets, with stationary or lift-front plate holder, has two additions. A narrow front shell helmet with flanges on all sides, and a straight bib helmet. AMERICAN OPTICAL CO., SOUTHBRIDGE, MASS.

Pressure Tube Liquid Filter

Braided wire or plastic tubes of Flex-Tube filter stretch under pressure, then shrink back at end of cycle, dislodging cake. Strands are continuous from ferrule to end to eliminate pulling loose. Does not clog or bridge, according to the manufacturer. FILTOMOR INC., 460 BLOOMFIELD AVE., MONTCLAIR, N. J.

Submersible Pump

Model 139-VTO's ½-hp motor delivers 8,600 gph at a 5-ft head or 6,900 gph at a 10-ft head. Variable turn-on control with up to 18-ft depth turn-on. KENCO PUMP DIV., 1305 OBERLIN AVE., LORAIN, OHIO.

Concrete Saw

Model SB-12 Concrete-Asphalt Saw has a ¾-in. arbor that allows the use of portable-saw abrasive blades, as well as standard concrete and asphalt cutting blades from 6 to 12 in. in diameter. An adaptor for 1-in. arbor blades is available. Weighing less than 200 lb, the SB-12 has a water-feed attachment on all models, for use with diamond blades. A 7-hp gasoline engine or a 3-hp electric motor supplies power. EQUIPMENT DEVELOPMENT CO., INC., 2700 GARFIELD AVE., SILVER SPRING, MD.

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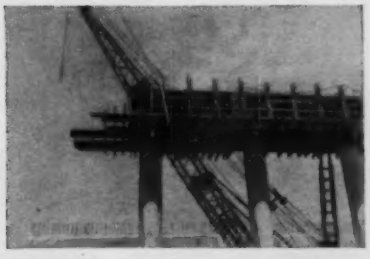
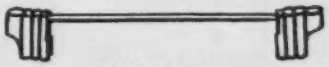


Pres-Steel Hanger
(patented)



Haunch Pres-Steel Hanger

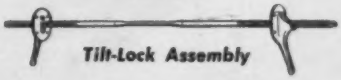
Con-Beam Hanger

Wire Beam Saddle

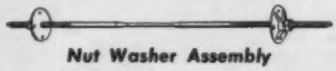
Coil Beam Saddle

Cone-Fast Coil Tie

4-Strut Coil Tie



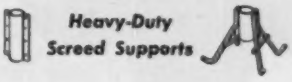
Tilt-Lock Assembly



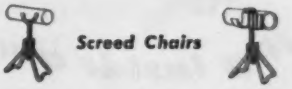
Nut Washer Assembly

Supertie Assembly

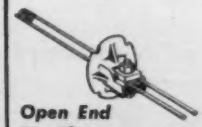
5M & 3M Snap Ties



Heavy-Duty Screed Supports



Screed Chairs



Open End Tie Clamp

Threaded Coil Rod

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.
A Suburb of Chicago

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Houston Office
4101 San Jacinto, Houston 4, Tex.

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2100 Williams St., San Leandro, Calif.

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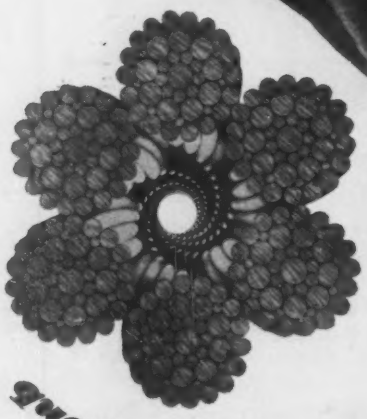

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Men and Jobs

A. Allan Bates Heads Research Community

A. Allan Bates, formerly vice president for research and development at the Portland Cement Association, has been named director of University Valley, New York University's new research and educational center in Sterling Forest, Orange County, N. Y.

The 30-sq-mi. tract near Tuxedo Park, N. Y., is being developed as a research center in the physical sciences, engineering, and medicine to service the New York metropolitan area and the state. It will also include a residential community for NYU staff and faculty.

Mr. Bates is the immediate past president of the American Society for Testing and Materials and is a director of the American Concrete Institute. He is also a member of the executive committee of the Building Research Board of the National Academy of Sciences.

Briefs . . .

Daniel L. Goldy, Portland, Ore. lumber company executive and consulting economist, has been named deputy to Administrator William L. Batt, Jr. of the U. S. Department of Commerce Office of Area Development.

Richard G. Folsom, president of Rensselaer Polytechnic Institute, was appointed chairman of the Special Advisory Committee of the Building Research Advisory Board for the Study of Building Research in the National Bureau of Standards.

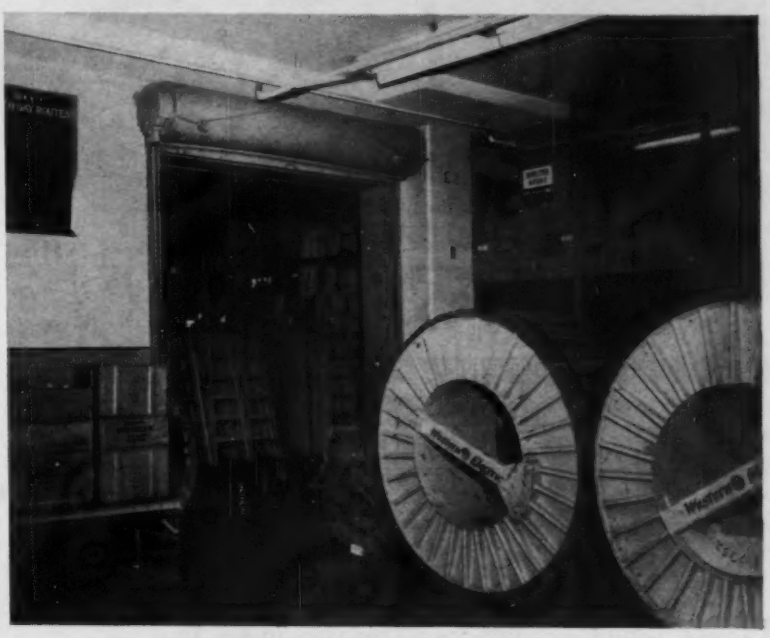
Joseph D. Carrabino, production management expert and professor at UCLA, has been elected president of the newly-formed Los Angeles Board of Harbor Commissioners. **Dr. George E. Wall,** a San Pedro physician, was named vice president.

Lowell S. Coy has been appointed chief engineer for the Texas division by the Bureau of Public Roads. He was replaced as North Carolina division chief by **James D. Lacey.**

Three new members have been appointed to the Water Pollution Control Advisory Board. **John A. Biggs** of the Washington State Game Department was named director; **Ed E. Reid,** Alabama League of Municipalities, executive director; and **Maurice K. Goddard,** Pennsylvania Department of Forests and Waters, secretary.

A. F. Spilhaus, a University of Minnesota meteorologist and oceanographer was named U.S. Commissioner to the Seattle World's Fair which opens in April, 1962.

THE CLIENT IS PLEASED



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Jot down your job requirements. We'll send the answers back to you packed into your WHITE.

Because for each of your special needs there's a WHITE component that fills the bill. And we'll work with you to develop the truck to match exactly your requirements of load, terrain and performance.

Your WHITE doesn't even begin "being built" until you point out the job you want it to do. (It's no mass-produced, assembly-line vehicle already sitting in our yard, waiting to "come close" to your specifications.)

It's stamped *yours* by WHITE—*the company that stays close to its customers. And listens when they speak.*

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WHITE TRUCKS

Obituaries

Joseph Breslove, 82, former consulting engineer with Westinghouse Electric, Allis-Chalmers and Aluminum Co. of America. He was widely known as an expert in the design of power plants and planned one of the first all-electric steel mills in the country.

Morris L. Hicks, 51, manager of the Philadelphia office of the Dravo Corp. He was a graduate of Swarthmore College.

Everett W. Ewig, 56, vice president and general manager of Lozier Consultants, Inc. A graduate of Rensselaer Polytechnic Institute, he was a consulting engineer on water supply and sewage disposal problems.

Ray Sims, 73, member of the Columbus, Ohio, architect firm of Sims, Cornelius & Schooley.

Thomas H. Smith, 59, vice president and general manager of Betteridge-Smith Construction Co., Ltd., of Hamilton, Ontario.

Arthur Edwards, 64, a civil engineer with the city of Columbus, Ohio, for 40 years.

John R. Peyton, 78, retired chief civilian officer of the Army Corps of Engineers in the Jacksonville, Fla., district. A graduate of the U.S. Military Academy, he was an authority on dredging. He was largely responsible for development of the Intracoastal Waterway between Miami and Jacksonville and was active in improvement of the port of Jacksonville.

John K. Ruff, 70, a Baltimore contractor credited with constructing many apartment buildings in the city and several developments in Baltimore County.

George H. Stewart, 80, retired civil engineer with the maintenance of way division of the Pennsylvania Railroad. He was a graduate of Colgate University and worked for the railroad for 34 years.

Peter Goldberg, 74, head of the Goldberg Construction Co. of Cleveland, Ohio, and a partner in Midwest Construction Co. and J & E Construction Co.

Foster Gunnison, 65, credited with producing the first commercially successful prefabricated home. He was once president of Homes, Inc. and of Gunnison Homes, Inc.

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Placement of this 300 ton load face shield was but a part of the complete field installation of a large atomic reactor for a power project recently completed by P. C. & R. specialists.

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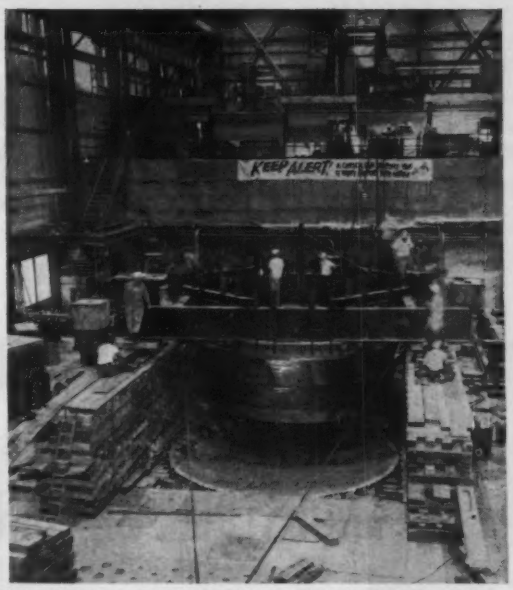

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NATURE OF BUSINESS* _____

* If contracting, please check type: ☐ Building ☐ Highways & Streets ☐ Other heavy construction ☐ Both building and non-building

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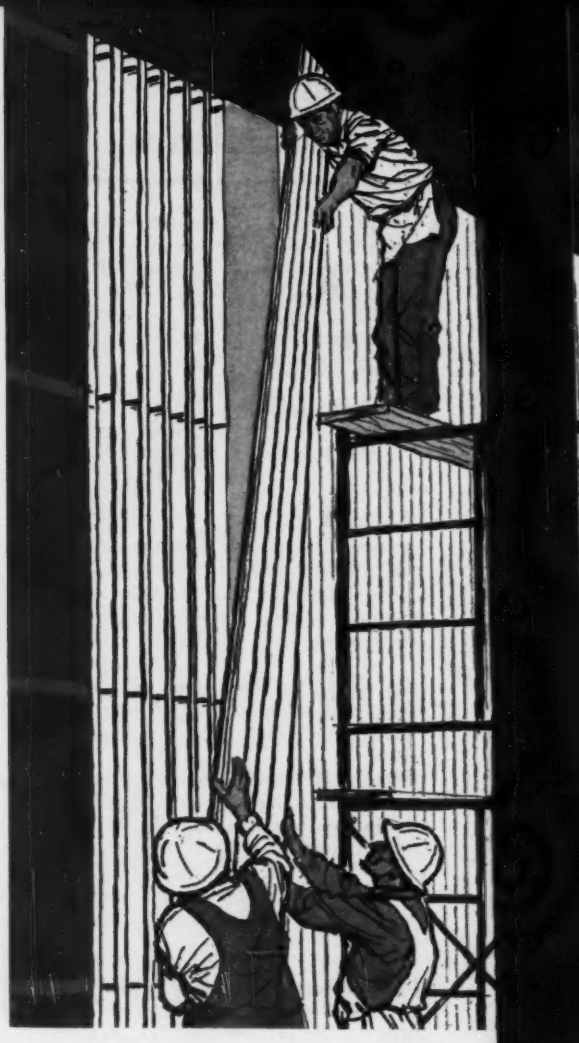
TRUSCON CURTAIN WALL PANELS INSULATED OR NONINSULATED ...FOR COMMERCIAL AND INDUSTRIAL BUILDINGS



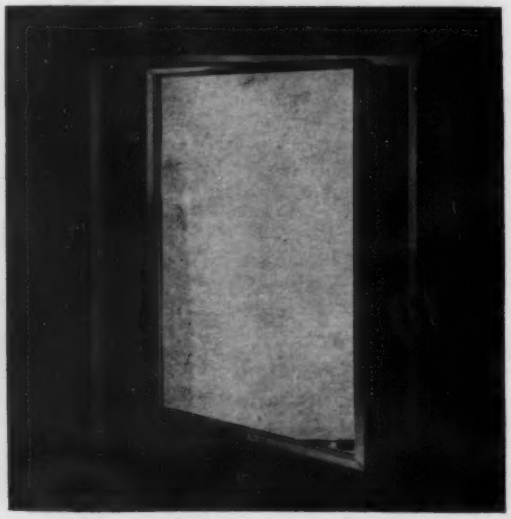
Truscon Curtain Wall Panels, insulated or noninsulated, are the answer to fast, economical commercial and industrial housing. Architecturally beautiful to blend with modern industrial parks, commercial service, and shopping centers.

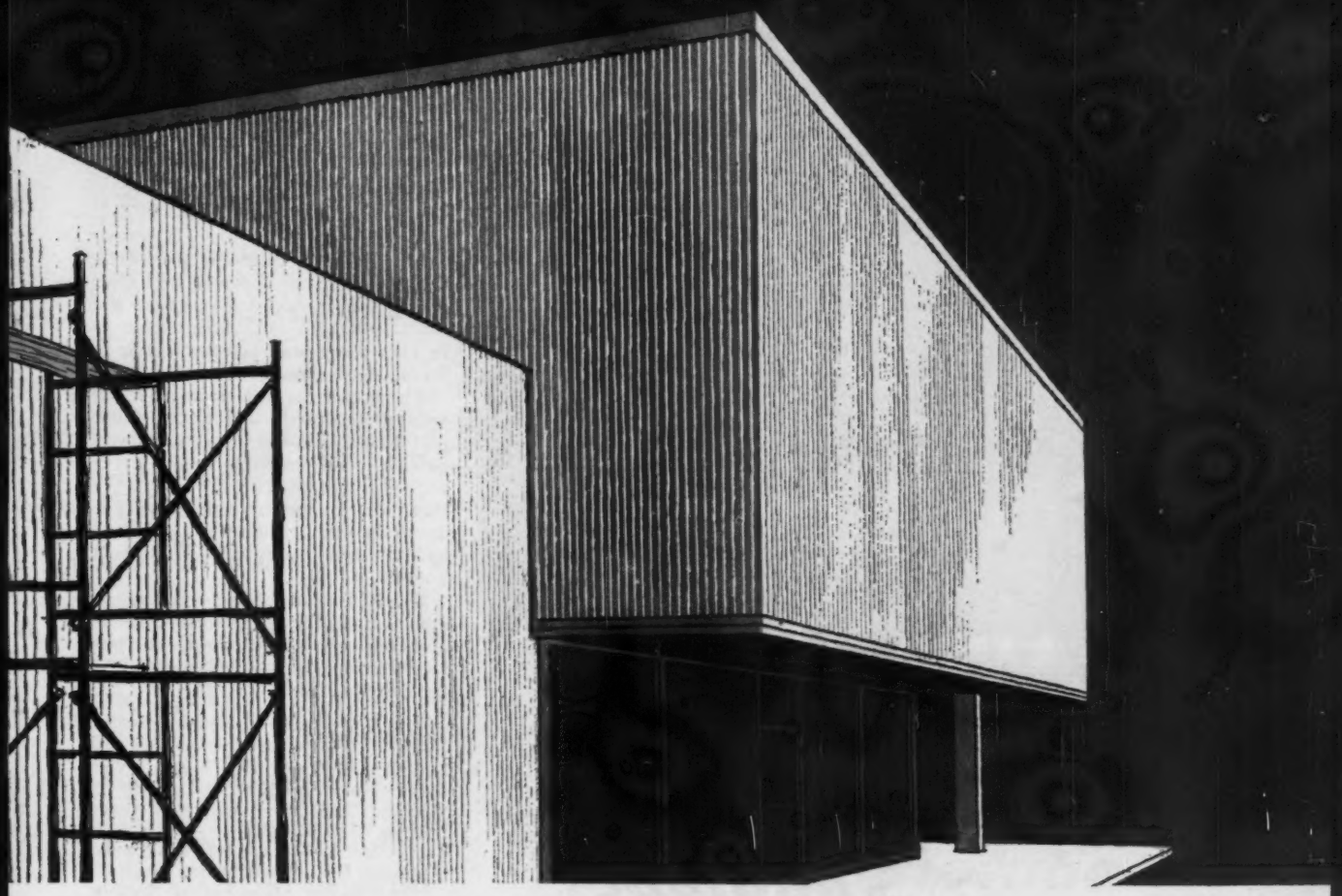
Truscon Insulated Panels are constructed by sandwiching a layer of insulating material between two sheets of Truscon 24″ Ferrobord® or galvanized ribbed sheeting. Panels are securely interlocked and button-punched for maximum weathertightness. Panels are furnished painted or galvanized, in widths of 2′0″, and up to 40′ 0″ in length.

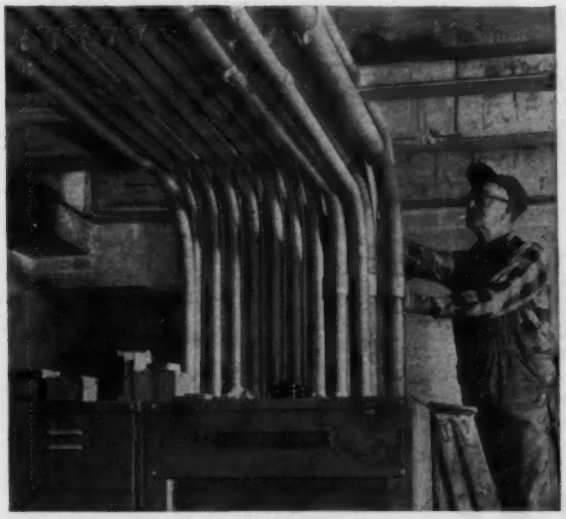
Low installation cost, very little maintenance cost. Available for immediate delivery. Your Republic-Truscon representative will be happy to work with you. Call, or write direct, for complete specifications and data.

REPUBLIC HIGH STRENGTH BOLTS were used to advantage in the construction of the new Bobbie Brooks, Inc., warehouse, Cleveland, Ohio. Two-man crews installed the bolts quickly and easily on the 80-foot, double-pitched main trusses. Erection schedules are easily met or even shortened when you use Republic High Strength Bolts. Call your Republic representative, or send for attractive, illustrated folder. Use coupon.

TRUSCON VERTICALLY PIVOTED ALUMINUM WINDOWS offer unlimited versatility in design and application. Rotate a full 360 degrees, lock automatically in reverse position. Cleaning is done simply and safely from the inside. Ideal for weather-conditioned buildings—double weatherstripped around the entire perimeter. Write for more information.







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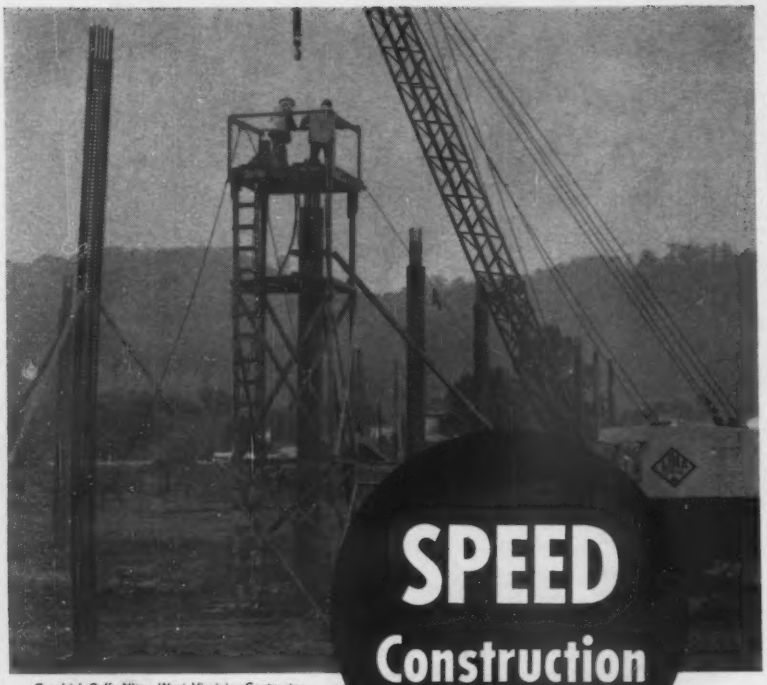

Goodrich-Gulf, Nitro, West Virginia, Contractor: Cleveland Cement Contr., Cleveland, Ohio

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for round concrete columns

You can forget many of the "normal" delays of concrete construction . . . when you use time-saving SONOTUBE Fibre Forms for round concrete columns!

With one piece, one-time-use SONOTUBE Fibre Forms, there's no fabrication or assembly. No dismantling, cleaning, re-oiling or return-shipping either. You can pour all the columns at one time, too—a definite advantage when compared to the use of a limited number of "permanent" forms.

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Next time a job calls for round concrete columns, make sure you specify *and use* the fastest, most economical forming method—SONOTUBE Fibre Forms. Available 6" to 48" I. D., in several types to meet various job requirements. Order standard 18' lengths.

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Books

Waterfront Structures

DESIGN AND CONSTRUCTION OF PORTS AND MARINE STRUCTURES—by Alonzo DeF. Quinn. 550 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $16.00

Mr. Quinn is chief engineer of the Frederick Snare Corporation, New York engineers and heavy construction contractors. His world-wide experience in port design and construction is reflected in this book.

The book covers a wide range of subjects—port growth and development, port design, breakwaters, piers, wharves, bulkheads, oil terminals, mobile docks, drilling and radar platforms and navigation aids. Engineers, contractors, governmental officials concerned with ports and industrial groups will find the book a useful tool.

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EVALUATION OF COMPONENTS FOR UNDERGROUND HEAT DISTRIBUTION SYSTEMS. NAS PUB. NO. 828.—National Academy of Sciences, 2101 Constitution Ave., Washington 25, D.C. $1.50

CRITERIA FOR THE ACCEPTANCE OF CAST IRON SOIL PIPE. NAS PUB. NO. 836—National Academy of Sciences, 2101 Constitution Ave., Washington 25, D.C. $2.00

PROFESSIONAL CLIMATE IN ENGINEERING.—XIIIth edition. A College Industry Conference. Feb 2, 1961. Sponsors: Relations with Industry Division of the American Society for Engineering Education and the University of Cincinnati. 104 pages. $5.00

FACT SHEETS ON U. S. NUCLEAR POWER PROJECTS—Third Edition, April 1961. The Electric Companies Public Information Program, 230 Park Ave., New York 17, N. Y. $1.00

PIPELINES TO HEALTH.—Motion picture on community sewer services, produced by Johns Manville, 22 East 40th St., New York 16, N.Y.

PIPE FRICTION MANUAL—Third Edition. 90 pages. The Hydraulic Institute, 122 East 42nd St., New York 17, N.Y. $2.00

WATER: MEASURING AND MEETING FUTURE REQUIREMENTS—edited by Harold Amoss. 261 pages. University of Colorado Press, Boulder, Colo. $3.50

FLUORESCENT LIGHTING MANUAL—by Charles L. Amick. Third edition. 400 pages. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N.Y. $12.50.

GUIDE TO FIELD COST ACCOUNTING FOR BUILDING CONTRACTORS—Three-part procedure: (1) preparation of project estimate by a standard system; (2) job labor and material cost distribution by a standard cost accounting system; and (3) preparation of cost reports to provide realistic forecast of job outcome and comparison of actual and estimated items. Standard forms are filled out for a sample job. $2.50. ($1.25 to AGC members) AGC Form No. 18. The Associated General Contractors of America, 1957 E St., N. W., Washington, D. C.

LEAP PRESTRESSED CONCRETE FRAMING FOR SCHOOLS. Working drawings illustrate how prestressed concrete double tees, key-stone joists and giant tees frame classrooms. Connection, wall-bearing and anchorage details are shown. 33 pages. Leap Associates, P.O. Box 1053, Lakeland, Fla. $3.00

Reports and Pamphlets . . .

HYDROGRAPHIC MANUAL (Revised Edition)—Publication 20-2 by U.S. Coast and Geodetic Survey. 283 pages. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. $2.00

DEMINERALIZATION OF SALINE WATER BY ELECTRICALLY-INDUCED ADSORPTION ON POROUS GRAPHITE ELECTRODES. Department of Commerce. Order number PB 171129. $1.75

CORROSION OF METALS IN SEA WATER. Department of Commerce. Order number PB 171344. $1.75

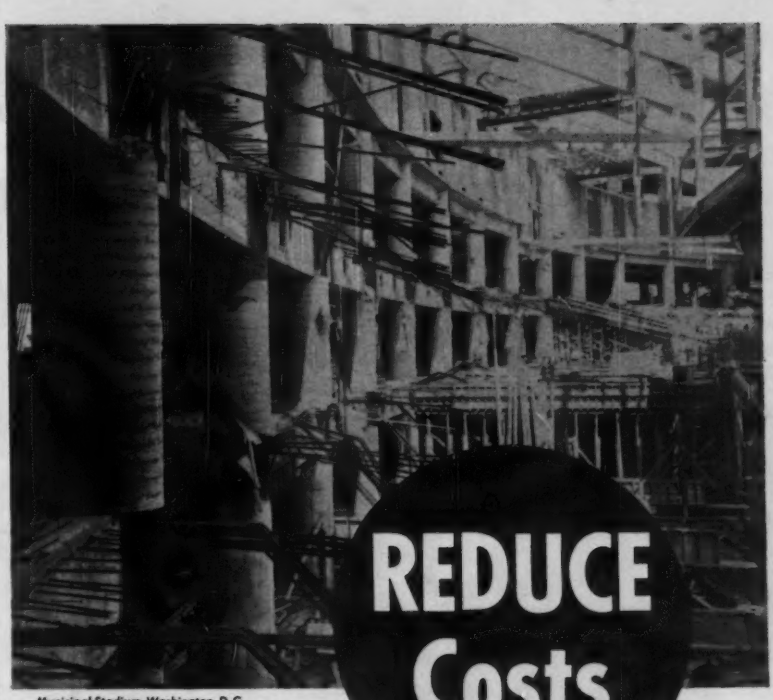
PROCEEDINGS OF THE SECOND WORLD CONFERENCE ON EARTHQUAKE ENGINEERING—Three volumes. Science Council of Japan, July 11-18, 1960. 2226 pages. Gakujutsu Bunken Fukyu-Kai, c/o Tokyo Institute of Technology, Oh-pkayama, Meguro-ku, Tokyo, Japan. $17.00 set.

TRIG, LOG, ANTILOG AND LOG OF TRIG FUNCTIONS 6 PLACE TABLES. Vest-Pocket Library. Ottenheimer Publishers, 4805 Nelson Ave., Baltimore 15, Md. $1.00

HYDROLOGIC NETWORKS AND METHODS—Transactions of the Interregional Seminar on Hydrologic Networks and Methods, held at Bangkok in July, 1959, under auspices of the United Nations Economic Commission for Asia and the Far East, World Meteorological Organization. 157 pages. International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y. $3.

CLEAN WATER—A 48-page summary report on the National Conference on Water Pollution held last December in Washington under auspices of the Department of Health, Education and Welfare. Includes highlights and recommendations. Public Health Service Department of Health, Education and Welfare, Washington 25, D. C. Free.

CSA STANDARD G30. 7-1961—Special Large Size Deformed Billet-Steel Bars for Concrete Reinforcement. Canadian Standards Association, 235 Montreal Road, Ottawa 2, Canada. $1.00



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Contractor: McCloskey & Company

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FIBRE FORMS
for round concrete columns

By eliminating . . . or simplifying . . . many on-the-job forming details, SONOTUBE Fibre Forms produce substantial savings in any structure where round concrete columns are specified.

Sure, lightweight SONOTUBE Fibre Forms place, brace, pour and strip easier and quicker. But, more than that, they have job-site *adaptability:* they can be cut to tie in with walls or beams, drilled for tie-in rods or anchor bolts, scored for utility outlets.

Another thing—a SONOTUBE Fibre Form provides for proper "wet curing" of concrete. When stripped, the result is a dense, hard concrete surface that requires no special curing compounds or treatments.

Finally, SONOTUBE Fibre Forms are *job-suited*—with five types to meet a variety of requirements: "A" Coated (for exposed columns); Seamless (for extra-smooth finished columns); "W" Coated (for unexposed columns); Encasement forms (for concrete encasement of existing members); and Special (for use in water or excessive dampness). Order to your needs—in sizes 6" to 48" I.D.

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STEEL DRAINAGE PIPE FLEXES WITH THE FILL

. . . and that makes a whale of a difference in the design of a drainage system! You get that flexibility-with-strength only in pipe made with corrugated steel.

Drainage pipe made of corrugated Beth-Cu-Loy (copper-steel) sheets may look thin enough to crumple under heavy loads. But it *can* be thin because it has steel's strength—and its very thinness gives the pipe transverse flexibility.

Flexibility, in turn, lets the structure use the surrounding material to help support loads. The stress tends to be peripheral, rather than vertical.

With its heavy coating of zinc, Beth-Cu-Loy drainage pipe is durable. Pipe of this type often lasts 40 years and more. It is light enough for easy handling and installation. Pipe joints can be quickly made in the field, with no time lost for setting and curing.

If you would like full details about Beth-Cu-Loy sheets for drainage structures, your local pipe fabricator can give them to you. We'll be glad to furnish you with the name of a fabricator near you.

Galvanized Steel

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Canadians out-bid U. S. companies for

Earth-Fill Dam in Montana

A Canadian joint venture composed of Emil Anderson Construction Co., Ltd., Square M Construction Ltd., and Coleman Collieries Ltd., Vancouver, B. C., underbid a field of eight American competitors to pick up the Bureau of Reclamation's Clark Canyon Dam award for $3,347,403. The Canadians are 6% under a Portland, Ore., combine of R. A. Heintz Construction Co., and Rogers Construction Co., 28% under the high, and 4% below estimate.

Only a hair separated the three lowest American bidders. A scant 0.4% stood between the Heintz-Rogers bid and the third low, while 0.1% made the difference between the third and fourth lows.

The earth-fill dam will be on the Beaverhead River 20 miles southwest of Dillon, Mont. The dam embankment measures 2,900 ft at the crest and rises to a top height of 133 ft above the river bed.

Earth-fill excavation prices range from $0.40 to $0.80 a yard for the first 780,000 cu yd, and structure excavation runs from the Canadian combine's low of $1.08 a yard to $2.75 for 305 cu yd.

Work also includes construction of a concrete spillway and inlet, outlet works, crest structure, chute, stilling basin, and country road relocation.

Concrete for spillway and outlet works stilling basins ranges from $25.00 to $59.00 a unit for 6,550 cu yd, and concrete in spillway chute and drainage gallery from $40.00 to $70.00 a yard for 1,635 cu yd.

Wage rates include: carpenters, $3.40/hr; cement masons, $3.35; reinforcing ironworkers, $3.60; general laborer, $2.615/hr; riprapper $2.775/hr.

The bidding included:

1C	**Emil Anderson Const. Co., Ltd.; Square M. Const. Ltd.; Coleman Collieries Ltd., Vancouver B. C**	**$3,347,403**
2	R. A. Heintz Const. Co & Rogers Const. Co. Portland, Ore	3,561,623
9	J. A. Jones Const. Co. & Osberg Const. Co., Seattle, Wash	4,621,387
EE	Bureau of Reclamation	3,496,582

Bids: 8-24-61 Items	Unit	Quantity	Unit Prices 1C	 2
Diversion & care of river during const & removal of water from fdn	cy	job	$145,000	$125,000
Excavation, str	cy	305,000	1.08	1.30
dam embank fdn, 1st 82,000	cy	82,000	0.48	1.12
over 82,000	cy	43,000	0.32	0.90
grout cap, depth-to 5'	cy	800	11.50	13.00
5' to 8'	cy	130	14.50	20.00
strip borrow pit earth fill mat, zone 1-borrow area W[a]	cy	95,000	0.21	0.23
1st 780,000 cy	cy	780,000	0.45	0.48
over 780,000 cy	cy	420,000	0.35	0.41
sand, gvl, cobble, zone 2-borrow area MZ[a]				
1st 360,000 cy	cy	360,000	0.55	0.60
over 360,000 cy	cy	200,000	0.43	0.54
Backfill, pervious	cy	22,500	0.43	0.84
Fill, earth, zone 1, dam embankment	cy	950,000	0.11	0.19
specially compacted	cy	15,000	0.39	2.60
sand, gvl, cobble, zone 2, dam embankment	cy	590,000	0.12	0.13
Fill, specially compacted misc, zone 3, dam embankment	cy	1,400	0.36	2.60
	cy	242,000	0.39	0.30
Riprap	cy	63,000	2.65	2.20
Settlement pts, const surf	ea	21	35.00	30.00
Drilling, grout holes 0-30'	lf	9,000	3.15	2.50
30'-60'	lf	4,500	3.30	2.50
60'-110'	lf	5,000	3.80	2.50
110'-160'	lf	1,000	4.50	2.50
Pipe & fttgs, for grouting	lb	6,600	1.05	0.70
Hook-up, to grout holes and connections	ea	300	22.00	12.00
Grouting, pressure	cf	39,000	2.30	2.00
Sand, for grouting	cy	100	11.50	30.00
Drilling, holes for anchor bars in place	lf	8,400	2.10	1.50
Pipe, perf sew[b], & const embankment toe drains, 8"ϕ	lf	1,160	5.15	5.00
12"ϕ	lf	1,480	6.20	6.00
4"ϕ	lf	1,030	4.85	5.00
6"ϕ	lf	270	5.00	5.50
8"ϕ	lf	1,220	5.15	6.00
Cement	bbl	30,000	6.00	5.60
Reinf bars, #5 or smaller	lb	229,000	0.185	0.125
#6 & 7	lb	425,000	0.19	0.125
#8-11	lb	1,354,000	0.185	0.125
Concrete, in grout caps	cy	900	33.00	30.00
outlet-works, intake str	cy	305	49.50	64.00
cond & cut-off collar	cy	1,875	47.00	55.00
gate chamber & shaft	cy	600	69.50	82.00
shaft house	cy	22	130.00	195.00
spillway, inlet & crest str except bridge	cy	1,245	54.00	54.00
bridge	cy	130	106.00	85.00
chute & drainage gallery	cy	1,635	52.00	58.00
& outlet-works stilling basins	cy	6,550	36.00	45.00
Waterstop, rubber, tp B	lf	2,400	2.90	3.00
Dowels	lb	1,800	0.30	1.50
Insulation, in sha ft house	sf	510	0.70	2.00
Roofing	sf	195	1.40	2.00
Door, hollow met insulated	ea	job	100.00	400.00
Gates, high-pressure, 3'x8' 6", & met cond linings	ea	job	21,500	15,000
Indicators, 2 gate position, & control equip, plus pipe for high-pressure gates	ea	job	1,000	3,500
Gage, reservoir level, pipe & copper tubing	ea	job	3,500	3,000
Metalwork	lb	6,000	0.57	1.00
Handrail, spillway drainage gallery	ea	job	2,000	2,000
Trashracks	ea	job	21,500	12,000
Fence, chain-link	lf	385	5.70	8.00
Ventilation sys & steel drain, air-inlet pipes, & steel air vent pipes w/ wire cloth	ea	job	4,300	5,000
Heating & de-icing sys	ea	job	2,150	5,000
Cond, electrical met, ¾" or less ϕ	lf	300	1.00	2.50
1"ϕ	lf	50	1.50	3.00
1½"ϕ	lf	50	2.00	3.50
Conductors, electrical insulated	lb	30	11.50	3.50
Grounding sys mat	lb	50	7.20	3.50
Wiring devices	ea	20	2.85	15.00
Boxes & cabinets, steel, electrical sys	lb	200	2.30	5.00
Metal work, for serv drop dead-end str, f, i, & fabricate	lb	50	1.45	3.00
Lighting fixtures, tp A	ea	3	35.00	20.00
tp B	ea	1	15.00	20.00
Cable, power service	lf	550	2.85	3.50
Electrical apparatus	lb	200	0.70	3.50
Excavation, roadway	cy	110,000	0.67	0.85
diversion ditch	cy	5,000	0.36	1.00
culverts	cy	200	2.00	3.00
Watering	Mgal	1,500	2.15	2.00
Rolling, roadway embankments	hr	200	22.00	15.00
Backfill, compacted	cy	1,400	0.57	3.00
CMP, 14 ga, 24"ϕ	lf	1,115	9.00	8.50
12 ga, 42"ϕ	lf	120	22.00	17.00
Guardrail, beam-type	lf	5,900	4.00	3.00
Surfacing, gvl or crushed rock	cy	6,500	1.45	1.20

a incl transport to dam embankment only b furnish only c place

Completion time: 1,100 calendar days

ENR Constr. Cost Index (1913=100) 20-cities avg.-854.09

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This is the motor operator ...

This is the name

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SHORT-THROW POWER CONTROLS insure safe, accurate shovel-crane operation, beat fatigue, boost production

Speed-o-Matic is not an air, partial booster or mechanical system. Basically, it's the same precise power-hydraulic control system you find on aircraft, machine tools, farm equipment — your own family car if it has power-brakes or steering.

On a Link-Belt Speeder the true power-hydraulic controls govern all fundamental shovel-crane operations — booming, swing and travel, load lowering/hoist and steer. To slip the machine into action you merely nudge short-throw control levers. Response is instant and smooth; no delay for pressure build-up . . . no jump . . . no snap.

Ask any Speed-o-Matic operator. He'll tell you it's the most fatigue-free, productive system he's ever worked . . . and the safest too! Speed-o-Matic lets him spot loads with pinpoint accuracy, lets him maneuver with wrist-action simplicity, lets him concentrate on the job, not the machine.

Speed-o-Matic power-hydraulic controls are standard on the entire Link-Belt Speeder line

1936 / 1961 — 25 years of controls leadership

Easy maintenance...

HYDRAULIC SYSTEM PRACTICALLY MAINTENANCE-FREE — Speed-o-Matic clutches automatically compensate for heat and normal lining wear

The Speed-o-Matic hydraulic system requires no priming or bleeding — only routine seasonal oil changes. There are no bushings, pins, links, clutch toggles. The actuating mechanism is oil-immersed. A micronic-type, replaceable filter keeps oil clean.

Interchangeable Speed-o-Matic clutches require little operator attention. Hydraulic-actuated cylinder pistons compensate automatically for normal lining wear, heat expansion or weather changes. There are no nuisance adjustments.

Twenty-five years of hydraulic manufacturing experience backs Speed-o-Matic; Link-Belt Speeder introduced the system in 1936. It is a modern product of the finest hydraulic shop in the shovel-crane industry. And all components (except pump) are made by Link-Belt Speeder. Get the complete Speed-o-Matic story from your distributor. Or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

107-61N

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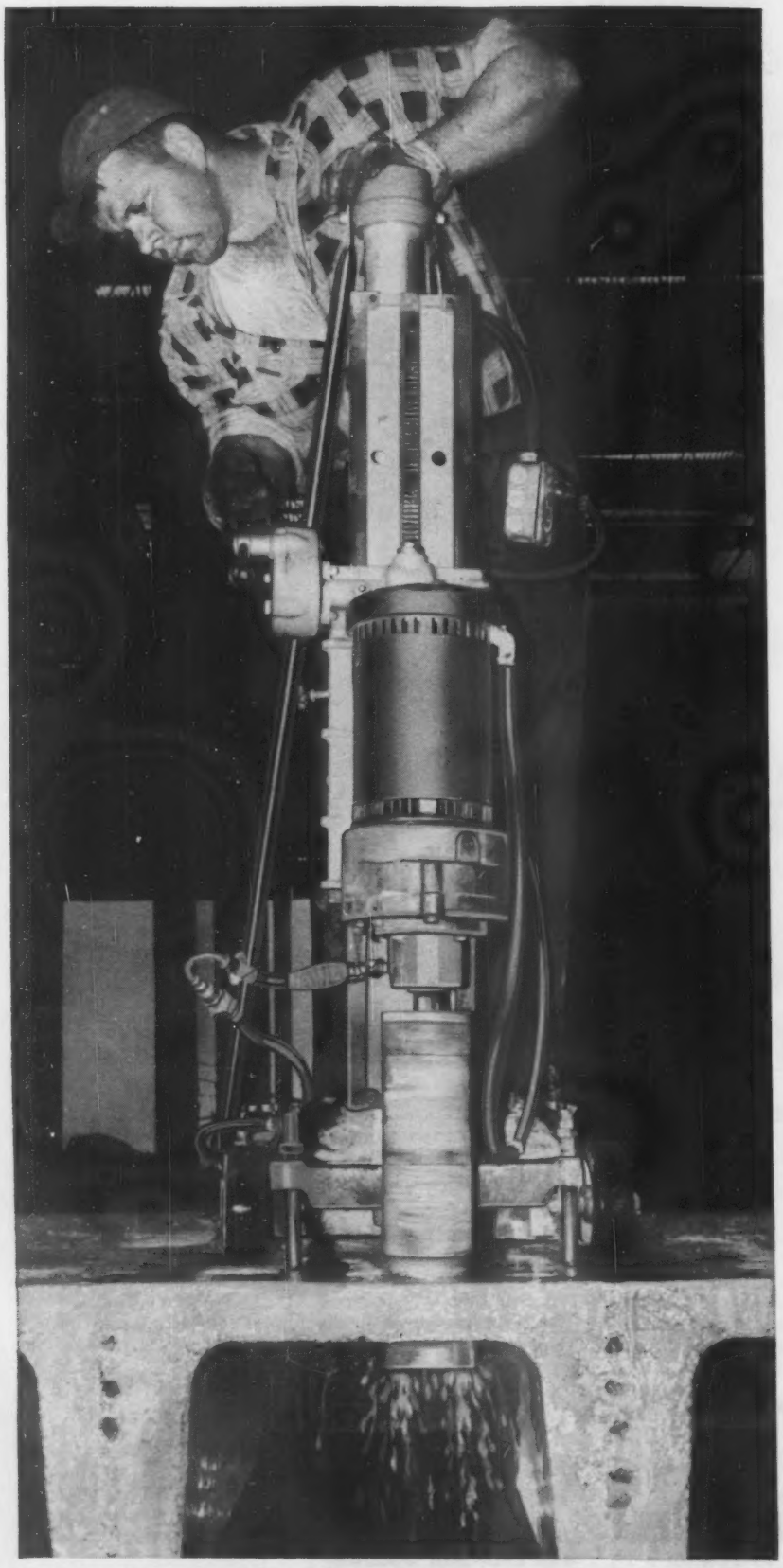

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Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES.

- Cement Aggregate, Ready Mixed Concrete Asphalt: Last, Oct. 5; Next, Nov. 11.
- Wood Products, Glass, Explosives, Chemical: Last, Oct. 19; Next, Nov. 23.
- Iron & Steel Products, Pipe: Last, Oct. 12; Next, Nov. 16.
- Structural Clay Building Tile, Brick and Lime: Last, Oct. 26; Next, Nov. 30.

HOURLY WAGE RATES—Base rate + fringe benefits

Classification	Atlanta $ + ¢	Baltimore $ + ¢	Birmingham $ + ¢	Boston $ + ¢	Chicago $ + ¢	Cincinnati $ + ¢	Cleveland $ + ¢	Dallas $ + ¢	Denver $ + ¢	Detroit $ + ¢	Kansas City $ + ¢	Los Angeles $ + ¢	Minneapolis $ + ¢	New Orleans $ + ¢	New York $ + ¢	Philadelphia $ + ¢	Pittsburgh $ + ¢	St. Louis $ + ¢	San Francisco $ + ¢	Seattle $ + ¢	Montreal $ + ¢	Toronto $ + ¢
COMMON LABOR																						
Building	2.00	2.30+7½	2.10	2.90+10	3.225+7½	2.90	3.52	1.95	2.47	3.00+34	2.705	3.26+10	3.00	1.925	3.65+292	2.70+15	2.85+20	3.025+10	3.225+10	3.00+25	1.82+4	2.05+8
Heavy Const.	2.00	2.30+7½	2.10	2.75+10	3.225+7½	3.025	3.435	1.95	2.42	3.00+34	2.755	3.26+10	2.98	2.00	3.65+292	2.70+15	2.715+20	3.025+10	3.225+10	3.00+25	1.82+4	2.05+8
SKILLED BUILDING TRADES																						
Bricklayers	4.05	4.10+15	4.15	4.20+30	4.40+10	4.125+14	4.085+25	4.15	4.15	4.09+33	4.20	4.35+25	4.025+15	3.775+7½	5.20+62	4.40+17	4.60+20	4.25+33	4.40+42½	4.30+30	2.62+6	3.20+13
Carpenters	3.45	3.725+7½	3.40	3.85+10	4.08+20	3.95	4.11+15	3.55	3.80c	3.75+47	3.75	4.00+20	3.68+15	3.35+075	4.75+38	4.00+20	4.225+20	3.975+104	3.95+36	3.53+20	2.42+5	2.95+12
Struct. Iron Workers	3.70+7½	4.10+20	3.77+13	4.26+20	4.55+16	4.025+105	4.16+10	3.675+8	3.91+10	4.10+27½	3.90	4.50+3.55	3.77+15	3.65+10	5.05+706	4.60+23	4.375+29	3.975+104	4.50+35	3.92+10	2.62+6	3.05+12
Plasterers	3.50+3	3.85+10	3.47	4.00+45	4.17+27	3.925+1	4.16+10	3.937+10	3.975+15	3.87+41	4.00	4.25+55	3.80+33	3.34+5	4.95+67	4.30+20A	4.325+20	4.10+7½	4.29+63	3.87+32	2.65+6	3.20+21
Electrical Workers	4.15+5	3.85+10	3.925	4.10+25	4.50	4.29+52	4.29	3.775+7½	4.20	4.11+52	4.30+43	4.90+49	3.85+44	4.00+7½	4.40+26	4.675+18	4.60+34½	4.26+52	4.38+37	4.025+26	2.55+5	3.60+19
Steamfitters	4.00+25	3.96+18	3.85+22	4.15+29	4.25+25	4.10+215	4.06+20	3.825+11	4.10+12	3.90+51	4.00+295	4.58+68	3.77+38	3.90+7½	4.80+772	4.35+32	4.25+20	4.425+25½	4.57+76	4.14+29	2.62+6	3.51+20
EQUIPMENT OPERATORS																						
Hoisting Engineers	3.88	4.10+20	3.45	4.15+35	4.05+05	3.90A	4.26	3.70	3.40	3.74+39½	3.72	4.01+25	3.75	3.475+7½	4.90+39	4.50/4.205 +275A	3.82+20	4.175	4.00+35	3.94+20	2.42+5C	3.25+13
Tractor Operators (B)																						
34–49 hp	3.25	3.70+20	3.45	3.575+35	3.80+5	3.675+10	4.01	2.625	2.65	3.74+39½	3.025	4.31+25	3.36	3.475+7½	4.375+35	3.78+275	3.82+20	4.175	4.23+35	3.91+30	2.02+4C	2.50+10
70–100 hp	3.25	3.70+20	3.45	3.575+35	3.95+5	3.675+10	4.01	2.625	3.25	3.74+39½	3.475	4.31+25	3.60	3.475+7½	4.375+35	4.03+275	3.82+20	4.175	4.23+35	3.91+30	2.25+5	2.60+10
Over 100 hp	3.25	3.70+20	3.45	3.575+35	3.85+5	3.675+10	4.01	2.625	3.25	3.74+39½	3.475	4.31+25	.....	3.475+7½	4.375+35	4.03+275	3.82+20	4.175	4.23+35	3.91+30	2.25+5	2.60+10
Tractor Scraper, 15–16 cy	3.25	3.70+20	3.45	3.575+35	3.85+25	3.675+10	4.01	2.625	3.25	3.74+39½	3.475	4.41+25	3.60	3.475+7½	4.50+36	4.03+275	3.82+20C	4.175	4.36+35	3.91+30	2.18+5	2.60+10
Power cranes & shovels																						
½ cy	3.78	4.10+20	3.45	4.00+35	4.40+5	3.675+10	4.16	3.425	3.40	3.74+39½	3.72	4.41+25	3.82	3.475+7½	5.25+420	4.50+275	4.02+20	4.175	4.67+35	4.28+30	2.52+5	3.10+12
¾ cy	3.78	4.10+20	3.45	4.00+35	4.40+5	3.90+10	4.16	3.425	3.40	3.74+39½	3.72	4.41+25	4.08	3.475+7½	5.25+420	4.50+275	4.02+20	4.175	4.67+35	4.28+30	2.52+5	3.25+13
Motor grader operator	3.25	3.25+20	3.45	4.00+35	3.85+5	3.90+10	4.01	2.625	3.25	3.74+39½	3.72	4.41+25	3.36	3.475+7½	4.50	3.93+275	4.02+20	4.175	4.44+35	4.00+30	2.25+5	2.90+11
Air Comp. operator	3.60	3.30+20	3.45	3.55+35	3.70+5	3.90+10	3.91	2.10	3.25	3.74+39½	3.475	3.53+25	3.25	2.75+7½	4.50+35	3.63+275	3.53+20	3.625	3.67+35	3.64+30	2.12+5	2.60+10
Air tool operator	2.22	2.325+7½C	2.25	2.80+10	4.00+5	3.90+10	3.885	2.10	2.75	3.13+34	2.80	3.47+10	3.30	2.075	4.10+492	2.70+10	2.825+20	3.625	3.655+10	3.35+10	2.12+5	2.60+10
TRUCK DRIVERS																						
1½ Ton	2.10	2.27+075	2.10	2.85+23	2.68+21	2.70+11	3.07+15	2.625	2.70	3.11+18	2.68	3.575+10	2.98	3.475+7½	3.275+28	2.82+18	2.75+20C	3.05+15	3.38+21	3.50+30	1.82+4	2.15+15
Under 4 cy	2.20	2.27+075	2.30	2.85+23	2.68+21	2.75+11	3.07+15	2.625	2.85	3.11+18	2.68	3.575+10	2.98	3.475+7½	3.275+28	2.82+18	2.735+30	3.25+15	3.253+21	3.50+30	1.82+4	2.15+15
Over 4 cy	2.60	2.27+075	2.70	2.85+23	2.68+21	2.80+11	3.07+15	2.625	3.05	3.11+18	2.755	3.765+10	3.13	3.475+7½	3.275+28	2.82+18	2.835+20	3.35+15	3.413+21	3.70+30	1.82+4	2.15+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.246, ENR Common Labor Average $2.671 Description of fringe benefits last appeared Sept. 22 1960. •A 2 drum. •B Including Bulldozers

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH																						
Plaster board, ½"	$82.50F	$54.00	$63.00H	$61.00mH	$67.50	$53.50wH	$64.00CF	$57.50	$64.50H	$66.00K	$72.00H	$67.00F	$68.00	$57.00H	$70.00H	$54.00	$74.00K	$56.50/67.50	$60.00	$74.25K	$58.00M	$58.00
" " ⅝"	52.50F	47.50	52.00H	51.00mH	54.50	43.85wH	57.50CF	47.50	54.00H	56.00K	62.00H	60.50F	58.00	48.00H	56.00H	46.00	65.00K	51–56HO	49.00F	62.00K	50.00M	52.00
Board lath, ⅜"	42.50F	35.75	47.77H	36.00mH	45.00	33.05wH	40.00CF	43.50	42.00H	42.45K	45.00H	0.34F	0.41xL	40.00H	44.50H	37.50	40.00K	40.00HO	0.36xF	54.00K	39/42.00M	41.00L
SHEATHING																						
Gypsum T & G, ½"	62.50F	55.70	75.00H	56.00mH	62.50	51.16wH	53.75CF	57.50	66.75H	66.00K	.....	64.50F	67.00	57.00H	60.00H	49.50	63.00K	67.00HO	61.00F	73.00K	54.00M	70.00
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	65.00wH	81.00CF	68.75	62.50H	57.00DK	75.00H	75.00F	100.00	67.00H	78.00	62.50	60.00K	65–75HO	70.00F	68.50K	63.00M	65.00T
" " 25/32", T & G	.....	108.50	140.50H	120.00H	123.00	125.00wH	126.00CF	118.00	107.50H	89.18DK	122.00H	125.00F	135.00	140.00H	124.00	110.00	100.00K	115/120	111.00F	68.50K	.....	.....
INSULATION																						
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	88.00CF	68.75	75.00	62.50DK	80.00H	80.00F	81.00	80.00H	78.00	65.00	60.00K	75/80	69.00F	71.00K	73.00M	75.50T
Min. wool, loose	1.08z	1.40F	1.40	1.70bH	1.85	1.45wH	1.35	1.50	1.55b	1.30b	1.40H	76.00BeF	1.75y	2.25L	1.55b	1.20	1.25eK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	67.80F	67.50	70.00	75.00H	80.00	60.00wH	70H	65.00	65.00ub	52.00	75.00H	83.00F	70.00	70.00*	68.50k	47.00	55.00K	60/70	66.50F	58.00K	60.00M	61.00
Glass fiber, loose	1.45	1.60F	2.00	.....	.....	1.45wH	.....	1.50	2.00b	1.85b	1.80H	1.35e	1.75	.....	.....	1.40	1.25ek	2.00P	1.75F	1.85*pK	1.35M	.....
" " 3" batts	48.00F	47.00F	65.00	75.00H	63/65	60.00wH	62.50	65.00	65.00n	80.00	75.00H	64.00	70.00	.....	68.50	47.00	55.00K	68.50	66.50F	50.25*lKh	60.00M	61.00
Aluminum foil, 1 side	3.62qi	4.00F	3.77gG	5.30xHS	5.25	3.02jwJ	14.00soJ	5.00gAG	5.25	.....	3.60d	4.20g	3.50	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	6.50K	9.00qM	15.50o
" " 2 layers	.....	33.50F	.....	53.50qH		66.00wJ	55.00J	45.00	48.65	.....	60.00	7.50V	.....	.....	40.00eH	83.50	38.50K	.....	60.00F	45.00EK	56.00M	46.00

•• F.o.b. warehouse. •a Semi thick. •b 30¢ bag. •c 3 layers of foil: $54.50. •d 40¢ kraft paper, 5 Msf, 100/500 rolls. •e 20¢ sq ft bag, 4" thick. •f Full trailer loads. •g 80¢ kraft paper backing 400 rolls or over. •h LCL. •i 40¢. •j 80¢. •k 2-in. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32¢ bag. •q 500 sf. •s 35¢ bag. •t 28¢ bag. •u Flame proof $75. •v 5000 sf quantity. •w F.o.b. city. •x Sq. yd. •y 30¢ bag. •z Spun rock wool. •A 650 sf. •B ton •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F Less 2% disc, 10th. •G ½ of 1%, 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K Less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax •R revised. •S 45 lb. •T less 2%, 30 days. •U lots of 2500 sq. ft. •V 250 sf roll.

MEXICO CITY WAGES AND PRICES, OCTOBER, 1961

WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor, building (peons)		101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos)

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1980.10
Reinf. steel, corrugated rods, per ton		
⅜"-⅝" x 11 meters consolidada		1875-1950
¾"-1" x 11 meters		1750.00

Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260.00
Lumber, 2" x 4" 1st class pine 20 ft	per M sq. ft.	3000.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Rhode Island**—BA 11/8—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., REHAB. BREAKWATER, CIVENG-19-916-62-18, Point Judith. $1,500,000. Extended date. CD 10/10/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Traylor Brothers, Inc.**, Station B, P.O. Box 6066, Evansville, Ind., CA $2,971,300, est. $2,989,000, Proj. C-214, Boston MAIN DRAINAGE RELIEF SEWER, Metropolitan Sewer Dist., Roxbury, MASSACHUSETTS. Commonwealth Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. BA 10/5. CD 10/11/61, under LB.

BUILDINGS—LB & CA

▲ **Turner Constr. Co.**, 150 E. 42 St., New York 17, N. Y., CA Est. $4,000,000, three 1 story, 200,000 sq. ft. BLADE MANUFACTURING PLANT; 35,000 sq. ft. SHIPPING and RECEIVING; 13,800 sq. ft. OFFICE, SOUTH BOSTON, MASS. Gillette Safety Razor Co., Gillette Park, South Boston, Mass. BA 9/25. CD 9/20/61.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., Syracuse**—BA 11/10—Merchants National Bank & Trust Co., 217 S. Warren St., OFFICE ADDN. $2,000,000. Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., archts. CD 9/20/61.

▲ **N. Y., New York**—BA 11/16—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures PUBLIC SCHOOL 74, E. 115 St. and 3 Ave., Manhattan Boro. Plans deposit $10. CD 6/16/61, under LB.

▲ **N. J., West New York**—BA 11/21—Supt. Schools, Bd. Educ., 6200 Broadway, Memorial HIGH SCHOOL ADDN. $1,500,000. Ricker & Axt, 6115 Hudson Ave., archts. Melvin Friedinan Assocs., c/o architects, mech. engrs. CD 2/13/61.

BUILDINGS—SLC

▲ **N. Y., New York**—Lenox Hill Hospital, 77 St. and Park Ave., Zone 21, soon lets contract 13 story, NURSING SCHOOL, 130 E. 77 St. $2,000,000. Rogers & Butler, 219 E. 44 St., Zone 17, archts. Jaros, Baum-Bolles, 415 Lexington Ave., Zone 17, mech. engrs. James Ruderman, 21 Union Sq., Zone 2, struct. engr. CD 10/16/61.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK** — State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 10/26, ROADS,

N. Y.—**S. J. Groves & Sons Co.**, 201 S. Main St., N. Syracuse, N. Y., LB $3,754,867, est. $4,013,000, (6 bidders), 9 in. c. conc. pavt. 4 brs. twin rein.-con. closed box, 5 hy. gr. seps. comp. I-beam, 2 RR gr. seps. comp. plate girder Int. Rte. Conn. 580 Rochester Western Expressway (West Side Dr. to Buffalo Rd., Rochester Airport Expressway, Part 1 (FAI Conn. 580 to Chili Ave.) Chili Rd. Part 1, SH 254, Chili Rd. Part 2, SH 255, Rte. 490, FISH 61-15 FARAE 61-1 FARC 61-83, Proj. I-IG 490-2(22); U-1103(3); U-231(18), Monroe Co.

N.Y.—**Peter Kiewit Sons' Co.**, P.O. Box 224, Eastwood Sta. Syracuse 6, N. Y., LB $3,353,277.50, est. $4,812,000, (8 bidders), 9 in. c. conc. pavt. 4.19 mi. (3.29 acc.) 2 hy. gr. seps. comp. plate girder, 4 hy. gr. seps. comp. beam, 2 RR gr. seps. comp. beam Int. Rte. 502, Saratoga Springs to Lake Elizabeth. Rte. 87 FISH 61-20. Proj. I-IG 87-3 (47), Saratoga Co.

N. Y.—**Savin Bros. Inc.**, 522 Cottage Grove Rd., Bloomfield, Conn., LB $4,401,725, est. $4,475,000, (2 bidders), 9 in. c. conc. pavt. 3.94 mi. (3.76 acc.) 3 hy. gr. seps. comp. I-beam Liberty-County Line, Part 1, SH 5223, Liberty-County Line, Part 2, SH 5234, Rte. 17 FARC 61-132. Proj. F-336 (17), Sullivan Co.

N. Y.—**Andrew Catapano Co. Inc. & Grow, Const. Co. Inc. & A. J. Orlando Co.**, New York, New York, LB $4,073,495, est. $4,171,000, (1 bidders), 9 in. c. conc. pavt. 0.57 mi. (1.03 acc.) 3 comp. I beam and plate gird. viads. 2 comp. I-beam viads. 1 hy. gr. sep. comp. I-beam, 1 ped. overpass plate girder Van Wyck Expwy. Ext. Contr. 3, (Kew Gardens Interchange) FAVWE 61-4. Proj. U-1085 (22), Queens Co.

N. Y.—**WITHDRAWN**, Est. $10,377,000, (bidders), 8 and 9 in. c. conc. pavt. 3.72 mi. (5.42 acc.) riveted steel rig. fr. structure welded thru pl. gird. struct. 2 ped. overpass comp. WF beam 2 ped. overpass WF beam, 1 ped. overpass welded plate girder, 3 comp. WF cantilever suspension, 1 WF beam plus alterations, wid'n. exist. WF beam br. Grand Central Pkwy. Sec. 2, Contr. 1 (Roosevelt Ave. to 77 Ave.) Int. Rte. Conn. 514 (Grand Central Pkwy. Horace Harding Expy. Interchange) Rte. 495 FAGCP 61-5 FIHHE 61-2. Proj. U-UG-899 (5); I-495-1 (48), Queens Co.

N. Y.—**Gull Contg. Co. Inc.**, 23-15 Lawrence St., Flushing 54, N. Y., LB $9,995,813, est. $11,290,000, (6 bidders), 8 in. c. conc. pavt. 2.67 mi. (4.23 acc.) 3 hy. gr. seps. comp. I-beam, 3 ped. overpass I-beam, rehab. I-beam and conc. rigid fr. underpass, rehab. comp. I-beam and girder viad. Grand Central Pkwy. Sect. 1, Contr. 1 (Brooklyn-Queens Expwy.) to Northern Blvd. Interchange FAGCP 61-6. Proj. I-899 (4), Queens Co. CD 9/26/61.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany. bids opened 10/26, BRIDGE,

N. Y.—**A. E. Ottaviano Inc.**, 80 Brook St., Croton-on-Hudson, N. Y., LB $5,000,001.90, est. $6,069,000, (11 bidders), plate girder bridge, approaches and ramps, conc. deck, roadway 0.721 mi., conc. pavt. 0.1 mi., misc. work 0.02 mi. Int. Rte. Conn. 515 Whitestone Expressway Contr. 2, (Flushing River Bridge and approaches), Rte. 678. FIWE 61-2. Proj. EI—678-1 (67), Queens Co. CD 9/26/61.

▲ **Naclerio Constr. Co.**, 3333 Merrit Ave., New York, N. Y., CA $2,136,285, reconstr. Stephenson Brook DRAIN and SANITARY SEWER, Sec. 1 from Echo Bay to N. Y., N. H. & H. R.R., Proj. 26-828-P1, NEW ROCHELLE, N. Y. City of New Rochelle, Bureau Engineering, 28 Wildcliff Dr., New Rochelle, N. Y. BA 9/29. CA 10/19. CD 10/4/61, under LB.

▲ **Nadal Baxdale, Inc.**, 654 Madison Ave., New York 21, N. Y., and **R. P. Farnsworth Co., Inc.**, 1515 S. Salcedo St., New Orleans 2, La., LB $4,987,979, (7 bidders), Proj. D-87, 150x775 ft. FINGER PIER, 170x585 ft. CARGO PIER at Pier 94 West 54 St., North River for Dpt. Marine & Aviation, NEW YORK, N. Y. Cunard Steamship Co. Ltd., lessee, 25 Broadway, New York 4, N. Y. BA 10/24. CD 10/19/61.

▲ **Mal-Bros. Contg. Co.**, Fairfield Ave., Caldwell, N. J., LB $3,583,008 (4 bidders), Contr. AK-140.001, ROADWAY WID'N. Outerbridge Crossing, NEW YORK and NEW JERSEY. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. BA 10/19. CD 9/11/61.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROADS,

Pa.—**S. J. Groves & Sons**, Simpson Ferry Rd. and Rte. 15, Camp Hill, Pa., CA $3,650,018, 34,730 ft. constr. separate hy. consisting of c. conc. pavement 24 ft. wide and 7 pairs of bridges, Proj. L.R. 799(3), Cumberland Co.;

Pa.—**Dinardo, Inc.**, 331 S. Bouquet St., Pittsburgh 13, Pa., CA $2,677,349, 1,810 ft. constr. of divided hy. bit. surface variable in width and 5 bridges, Proj. L.R. 1026(2-B), Allegheny Co. BA 9/29/61. CA 10/19/61. CD 10/5/61, under LB.

▲ **Intercounty Constr. Corp.**, 4720 Baltimore Ave., Hyattsville, Md., CA $1,530,095, Part B, consisting all SEWERS and APPURTENANCES to be completed and newly constr. to serve area known as Cherokee Ranch, South Temple, Hyde Crest, Muhlenberg Park, and sect. of Riverview Park, READING, PA. Muhlenberg Township Auth., 2840 Kutztown Rd., Hyde Park, Pa. BA 9/7/61, CA 10/19/61. CD 9/21/61, under LB.

BUILDINGS—LB & CA

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y., CA $9,041,000, foreign steel, fdns. and general constr. TOMPKINS HOUSES, Proj. NY 5-47, Park Ave., Throop Ave., Myrtle and Tompkins Aves., Brooklyn Boro, BROOKLYN, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 8/31, CA 10/18. Grand total $12,708,891, CD 9/5/61, under LB;
Afgo Engineering Corp., 475 Adelphi St., Brooklyn 17, N. Y., CA $996,382, heating and ventilating TOMPKINS HOUSES (Brooklyn, N. Y.);
Herman H. Schwartz, Inc., 97-11 Sutphin Blvd., Jamaica, N. Y., CA $774,470, electric work TOMPKINS HOUSES (Brooklyn, N. Y.);
Lipsky & Rosenthal, Inc., Madison Ave. and E. 112 St., New York 29, N. Y., CA $1,179,000, plumbing work TOMPKINS HOUSES (Brooklyn, N. Y.);
Watson Elevator Co., Inc., 625 W. 42 St., New York 36, N. Y., CA $718,039, elevators TOMPKINS HOUSES (Brooklyn, N. Y.).

▲ **Lefrak Organization**, 97-27 64 Rd., Forest Hills, N. Y., Owner Builds, $40,000,000, Lefrak City, Section I! four-16 story APARTMENTS; Section III, four-16 story APARTMENTS, Long Island Expressway, Junction Blvd 57 Ave. and 99 St., ELMHURST, N. Y. Jack Brown, c/o owner, archt. CD 5/16/60.

▲ **Diesel Constr. Co.**, 642 5 Ave., New York 19, N. Y., CA Est. $2,000,000, 12 story International Affairs CHURCH CENTER, southwest corner 44 St. and United Nations Plaza, NEW YORK, N. Y. Bd. Christian Social Concerns of the Methodist Church, 100 Maryland Ave. N. E., Wash. 2, D. C. William Lescaze, 211 E. 48 St., New York 17, N. Y., archt. Rutherford Stinard, 129 E. 45 St., New York 17, N. Y., mech. engr. Greenhut & Taffel, 114 E. 32 St., New York 16, N. Y., struct. engrs.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA Est. $5,000,000, 21 story, 182,000 sq. ft. Spring Mills OFFICE, 104 W. 40 St., NEW YORK, N. Y. Springs Cotton Mills, Inc., Fort Mill, S. C. Harrison & Abramovitz, 630 5 Ave., New York 20, N. Y., archts. Edwards & Hjorth, 67 W. 44 St., New York 36, N. Y., struct. engrs. Jaros, Baum & Bolles, 415 Lexington Ave., New York 17, N. Y., mech. engrs.

▲ **Terminal Constr. Corp.**, State Hy. 17 and Moonachie Ave. Wood Ridge, N. J., LB $2,177,000, (5 bidders), fdns. and general contract Proj. NYS-95, GAYLORD WHITE HOUSES, southeast portion E. 105 St., 2 Ave., E. 104 St. and 3 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 1002, Purchase Div., 10 Floor, 299 Broadway, New York 7, N. Y. BA 10/24. CD 10/10/61.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA Est. $1,500,000, 3 story, 123,560 sq. ft. OFFICE and 2 story, 62,000 sq. ft. RESEARCH LABORATORY, Rte. 9W, ENGLEWOOD CLIFFS, N. J. Thos. J. Lipton, Inc., 1500 Hudson St., Hoboken, N. J. CD 7/12/61.

▲ **Vickers Krebs, Ltd.**, 4970 Notre Dame East, Montreal, Que., Canada, CA $10,000,000, CHLORINE CAUSTIC SODA PLANT ADDN., waterfront, LINDEN, N. J. General Aniline & Film Corp., 111 West 50th St., New York, N. Y. CD 5/19/61.

▲ **Miclan Corp.**, P.O. Box 183, Fords, N. J., Owner Builds, $4,000,000, section 300 HOUSES, off Ft. 18 near Throckmorton Lane, OLD BRIDGE, N. J. Wm. Chirgotis, 80 Morris Ave., Springfield, N. J., archt.

▲ **Arthur Venneri Co.**, 300 North Ave. East, Westfield, N. J., CA $1,858,300, general contract, combination DINING HALL and DORMITORY for graduate students, College Ave., NEW BRUNSWICK, N. J. Rutgers University, Office of the Treasurer, Room 101, Queens Bldg., New Brunswick, N. J., BA 10/3/61, CA 10/23/61. CD 10/5/61, under LB.
Charles Simkin & Sons, Inc., 95 New Brunswick Ave., Hopelawn, N. J., CA $560,663, heating and ventilating contract, combination DINING HALL and DORMITORY for graduate students, College Ave., (New Brunswick, N. J.).

▲ **Henry A. Knott, Inc.**, 2406 Greenmount Ave., Baltimore, Md., CA $2,493,000, Lansdowne SENIOR HIGH SCHOOL, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. BA 10/10. CD 10/12/61, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Ga., Atlanta**—BA 11/13—City, City Hall, GARBAGE INCINERATOR, S. Cobb Dr. $3,000,000. Plans deposit $100. Robert & Company Assocs., 96 Poplar St. N.W., engrs. CD 4/10/61.

▲† **Louisiana**—BA 11/15—U. S. Eng., foot of Prytania St., New Orleans, 9,873,000 cu. yd. Whiskey Bay Pilot CHANNEL ENLARGEMENT, Mile 54.54 to Mile 60.64 (1950), Atchafalaya River Main Channel, Iberville and St. Martin Parishes, CIVENG-16-047-62-50. $2,000,000. Plans deposit $1. CD 10/3/61.

BUILDINGS—BA

▲ **Ga., Atlanta**—BA 11/8—Phoenix Investment Co., c/o James C. Wise, Simpson, Aiken & Assocs., archts., 873 Spring St., NW, 200 unit, 250,000 sq. ft. APARTMENT. $2,500,000. CD 7/6/61.

▲ **Ga., Atlanta**—BA 11/21—Atlanta Housing Auth., Hurt Bldg., Proj. GA-6-12, 650 low rent HOUSING UNITS, $6,500,000. Plans deposit $75. Stevens & Wilkinson, 157 Luckie St. NW, and Bodin & Lamberson, Forsyth Bldg., archts. CD 6/4/59.

BUILDINGS—SLC

▲ **Miss., Pascagoula**—Standard Oil of California with Standard Oil Co. of Kentucky, 225 Bush St., San Francisco, Calif., soon lets contract OIL REFINERY, Bayou Sasotte Area. $125,000,000. CD 8/28/61.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—State Dpt. Hys., 1221 East Broad St., Richmond, Bids opened 10/25, ROADS,

Va.—**S. T. Wooten Constr. Co., Inc.**, Rte. 1, Stantonsburg, N. C., LB $1,078,544, (11 bidders), grading, paving from Spotsylvania county line to 1.94 mi. north Int. Rte. 17 on Rte. 95 Proj. 0095-089-101, G301, B604, Contr. 3, Stafford, Co.;

Va.—**S. J. Groves & Sons Inc.**, Box 61, Camp Hill, Pa., LB $1,801,958, (4 bidders), grading, paving north of Troutville to south of Buchanan on Rte. 81, Proj. 0081-011-010, G303, B623, Contr. 1, Botetourt Co. CD 8/24/61.

▲ **VIRGINIA**—State Dpt. Hys., 1221 East Broad St., Richmond, Bids opened 10/25, BRIDGES,

Va.—**B. F. Diamond & Co., Inc.**, Box 647, Savannah, Ga., LB $2,298,379, (8 bidders), Downing Bridge and approaches at Tappahannock on Rte. 360, Proj. 0360-028-102, C501, B601; 0360-079-101, C501, Essex and Richmond Counties;

Va.—**T. A. Loving & Co.**, Wachovia Bank Bldg., Goldsboro, N. C., LB $1,274,910, (15 bidders), twin bridges over Rappahannock River on Rte. 95, Proj. 0095-088-102, B617, B618, Contr. 5, Stafford and Spotsylvania Counties. CD 9/25/61.

▲† **Grunley-Walsh Constr. Co., Inc.**, 327 Carroll St., N.W., Wash., D. C., CA $1,641,000, YARD WORK adjacent to terminal bldg. incl. underground utilities and structures, excavation, pavement, etc., Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16th and Constitution Ave. N.W., Wash., D. C. BA 7/27/61. CD 7/31/61, under LB.

▲ **GEORGIA**—State Hy. Dpt., No. 2 Capitol Square, Atlanta, Zone 3, ROADS,

Ga.—**Hugh Steele, Inc.**, Centre, Ala., CA $2,597,833, 9.734 mi. grading, paving on Perry to Macon Road, Interstate Rte. 75, beginning approx. 0.4 mi. south north City Limits of Perry, extending north, Federal Aid Proj. No. I-75-1(30)138, Contract 1, Houston and Peach Counties;

Ga.—**Henry Newton Co.**, Seaboard Ave. N.E., Decatur, Ga., CA **$2,042,485**, approx. 4.256 mi. grading, five dbl. bridges on Macon to Savannah Road, Interstate Rte. 16, beginning SR 19, south Dublin, extending east to FAS Rte. 1581, Federal Aid Proj. No. I-16-1(8)51, Ct. 1 & Ct. 2, Laurens Co.;

Ga.—**Shepherd Constr. Co.**, 1800 Briarcliff Rd. N.E., Atlanta, Ga., CA **$3,166,472**, 4.433 mi. grading, paving on Stone Mountain By-Pass, SR 10, beginning approx. 826 ft. southwest intersection Goldsmith Road and Memorial Drive, extending northeast and east to present state Rte. 10, Federal Aid Proj. Nos. F-010-2(8) CT. 1 and F-061-1(13) CT. 1, Dekalb and Gwinnett Counties. Grand total $7,806,790. BA 10/6/61. CD 10/17/61, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4, Bids opened 10/20, ROADS,

Ala.—**A. E. Burgess Co., Inc.**, Pincon Hy., Birmingham, Ala. and **Moss-Thornton Co., Inc.**, Leeds, Ala., LB **$3,533,840**, grading, conc. pave. 5.693 mi. and 879.668 lin. ft. grade separation structures from Riverside E. to U. S. 231 on Inter. Rte. 20, St. Clair-Talladega Co.;

Ala.—**Walters Constr. Co., Inc.**, Westlove St., Box 96, Troy, Ala. and **Bennett Constr. Co.**, P.O. Box 2776, Montgomery, Ala., LB **$1,553,433**, grading, bit. pave. 5.156 mi. from Calebee Creek E. to point near Neil's Chapel on Inter. Rte. 85, Macon Co. CD 10/20/61.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 10/18, BRIDGE,

Blount Bros. Constr. Co., 79 Commerce St., Montgomery, Ala., LB **$4,791,357**, steel, concrete bridge structure Lake Charles Interstate Hy. By-Pass (Calcasieu River Bridge-West Approach) 0.878 mi. SP No. 450-30-04, FAP No. I-210-1(37)26, Calcasieu Parish. CD 10/4/61.

BUILDINGS—LB & CA

▲ **R. L. Bulifant & Co. Inc.**, 301 Petersburg Pike, Richmond, Va., CA **$1,746,000**, Tuckahoe JUNIOR-SENIOR HIGH SCHOOL, Parham Rd., RICHMOND, VA. Henrico County School Bd., 21st and Main, Richmond, Va. BA 10/16/61, CA 10/20/61. CD 10/20/61, under LB.

▲ **Westover Hills Apartments**, c/o Morton G. Rhalimer, Inc. 1013 East Main, Richmond, Va., Owner Builds, **$3,000,000**. nineteen 418 unit APARTMENTS, RICHMOND, VA. CD 5/18/61.

▲ **Albany Contractors, Inc.**, P.O. Box 2063, Albany, Ga., CA **$2,069,667**, 206 units low rent HOUSING, MACON, GA. Macon Housing Auth., 1103 Oglethorpe St., Macon, Ga. BA 10/4/61. CD 10/10/61, under LB.

▲ **Mid-South Constructors**, P.O. Box 427, Montgomery, Ala., CA Est. **$2,500,000**, OFFICE for Veterans Administration, Selective Service, Dpt. Agriculture and Fish and Wildlife and Air Force Reserve, MONTGOMERY, ALA. Aronov Realty Co., 542 S. Court St., Montgomery, Ala. BA 9/1/61. CD 9/8/61, under LB. Under General Services Admin. as owner.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville 17, Ky., CA Est. **$3,000,000**, 200,000 sq. ft. SHOPPING CENTER, Bardstown Rd., LOUISVILLE, KY. Mid-City Shopping Center, Inc., Louisville Trust Co. Bldg., Louisville, Ky. CA About 10/16. CD 11/25/60, under CA. (SITE SOLD).

▲ **Commonwealth Ky., Div. Purchases**, Frankfort, Ky., rejected bids Oct. 19, ALUMNI COLISEUM, Eastern State College, RICHMOND, KY. LB **$2,671,609**. CD 10/23/61, under LB.

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA Est. **$7,500,000**, design and construct four 115 ft. high silos. CEMENT STORAGE, Presidential Island, MEMPHIS, TENN. Arkansas Cement Corp., Shannon Bldg., Little Rock, Ark.

MIDDLE WEST

BUILDINGS—BA

▲ **Ind., South Bend**—BA 11/8—Notre Dame University, South Bend, 12 story, limestone, brick LIBRARY, $7,500,000. Ellerbe & Co., 333 Sibley St., St. Paul, Minn., archts. CD 9/15/60.

▲ **Wis., Milwaukee**—BA 11/8—Northwestern National Insurance Co., 526 East Wisconsin Ave., 5 story OFFICE ADDN. $2,750,000. Grassold, Johnson & Assocs., 734 North Jefferson St., archts. CD 5/4/61.

BUILDINGS—SLC

▲ **Ill., Chicago**—American College of Surgeons, 40 E. Erie St., soon lets contract 7 story ADMINISTRATION BLDG., Rush and Erie Sts. $3,000,000. Skidmore, Owings & Merrill, 30 E. Monroe St., Zone 3, archts. CD 2/8/61.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus 15, Bids opened 10/24, ROADS,

O.—**The Lathrop Co., Inc.**, 1510 Montcalm Ave., Toledo, O., LB **$2,947,010**, est. $3,323,100 (8 bidders), constr. part of Toledo Expressway, grade separation imprv., State Rte. 2, New York Central Railroad, Toledo, Proj. 693, Lucas Co.;

O.—**D. E. Goodchild, Inc.**, P.O. Box 184, Circleville, O., LB **$523,039**, est. $578,500 (3 bidders), widening, resurf. sections US Rte. 22 between Williamsport and State Rte. 104, bridge over Lick Run, Proj. 700, Pickaway Co. CD 9/26/61.

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, ROAD,

John F. Casey Co., P.O. Box 1888, Pittsburgh, Pa., CA **$6,397,924**, Type T 35 on B 70 and structures, SR 3, Section 17.17, USR 62, Section 15.96, SR 102, Section 0.00, I-70-6 (7) 100 (City of Columbus) Proj. 678, Franklin Co. BA 10/3/61. CD 10/13/61, under LB.

▲ **C. J. Rogers, S. A. Healy, Gargaro Co., Barton-Malow Co.**, 6567 E. 7-Mile Rd., Detroit, Mich., CA **$1,986,053**, est. $2,560,911, Proj. NS-1, 16,709 lin. ft. DRAINS, spec. horse-shoe, open cut, 15 ft. 0 in. to 42 in., jct., chambers, manholes, structures, Birmingham, Troy, Clawson and Royal Oak, PONTIAC, MICH. Twelve Town Drains, 4th Floor, Supervs. Office, Oakland County Bldg., 1 Lafayette St., Pontiac, Mich. BA 9/29. CA 10/20. (Correction—contractor). CD 10/20/61 under CA.

BUILDINGS—LB & CA

▲ **Avalon Hills, Inc.**, 17403 Harvard Ave., Cleveland 28, O., Owner Builds, **$2,000,000**, 60 ranch and split-level Southwood Colony HOMES, Sandalwood, Mardale and Holly Rds., BEDFORD HEIGHTS, O.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Tex., Houston**—BA 11/21—Port Comm., 1519 Capitol Ave., EXPANSION GRAIN ELEVATOR and two STORAGE BINS each with eighty-eight 80x23 ft., concrete, steel round bins. $1,750,000. CD 2/15/61.

▲† **Missouri**—BA 12/20—National Park Service, Dpt. Interior, Jefferson National Expension Memorial, 11 N. 4 St., St. Louis, Zone 2, 630 ft. GATEWAY ARCH for Jefferson Expansion Memorial on river front between Eads Bridge and Poplar St., incl. VISITOR CENTER at its base, St. Louis. $10,000,000. Eero Saarinen & Assocs., Bloomfield Hills, Mich., and 1300 Woodward St., Birmingham, Mich., archts. CD 10/18/61.

BUILDINGS—BA

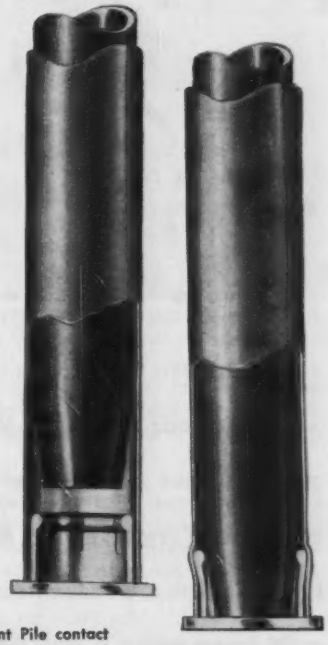
▲ **Minn., New Ulm**—BA 11/21—Poor Handmaids of Jesus Christ, Ancillo Domini Province, Loretta Hospital, 65-bed Loretta HOSPITAL. $2,000,000. Bettenburg, Townsend, Stolte & Comb, 1437 Marshall Ave., St. Paul, archts. CD 7/8/59.

▲† **Tex., Fort Hood**—BA 11/22—U. S. Eng., P.O. Box 1600, Fort Worth, BATTALION ADMINISTRATION SUPPLY, No. 3 EM BARRACKS, ENG-41-443-62-32. $2,350,000. Plans deposit $10. CD 10/13/61.

▲ **Tex., Temple**—BA 11/28—Scott-White Clinic, West Ave. K, (selected list of bidders), 6 story, bsmnt., 285,000 sq. ft. rein.-con. frame, fdn., masonry HOSPITAL, incl. air conditioning. $7,150,000. Plans deposit $125. Wyatt C. Hedrick, 1200 T & P Bldg., Fort Worth, archt. CD 6/8/59.

GUILD PILE DRIVING features The Versatile CAUDILL DRIVE-POINT PILE

An advanced type of cast-in-place pile



WHAT IT IS

The Caudill Drive-Point Pile is a cylindrical cast-in-place concrete pile with a thin steel pipe jacket. The bottom is closed by a special patented boot. The pipe seams and transition sections are welded, and as driven the pile is water-tight. The Caudill pile is driven by a heavy mandrel free from divided sections. The hammer causes the mandrel to expand the patented boot which locks with the pipe. As the mandrel is driven into the soil, it pulls the pipe with it.

WHAT IT DOES

The Caudill Drive-Point method installs a pipe of thinner thickness than can be driven without a mandrel and yet be thick enough to provide the minimum amount of steel necessary for reinforcement when required by codes and specifications.

For further information on the Caudill Drive-Point Pile contact C. L. Guild Construction Co.

C. L. GUILD CONSTRUCTION CO., INC.

90 Water Street, East Providence 14, R. I.

BOSTON, MASS. WASHINGTON, D. C. HOUSTON, TEXAS
SYRACUSE, N. Y. ATLANTA, GA. KANSAS CITY, MO.

▲ **Tex., Houston**—Bids Asked—Gulf Oil Corp., Gulf Bldg., (selected list of bidders) CHEMICAL PLANT, 400,000,000 lbs. annual capacity ethylene, Mount Belvieu, $11,000,000; LABORATORY and STORAGE, Mont Belvieu, Phase 1, 1,000 acre chemical complex site; WATER TREATMENT PLANT, Phase 2, Mont Belvieu; MAINTENANCE REPAIR SHOP, Phase 4, Mont Belvieu. CD 8/9/61.

BUILDINGS—SLC

▲ **Tex., Dallas**—Great National Life Insurance Co., 1604 Main St., soon lets contract 2 story, bsmnt., 62,000 sq. ft. masonry, steel frame OFFICE, Mockingbird Lane, Hines Blvd. and Treadway St. $1,750,000. Grayson Gill, Inc., 1913 San Jacinto St., Dallas, Tex., archt.-engr. Hunt & Joiner, Inc., 4512 North Central Expressway, engr. CD 7/6/61.

HEAVY CONSTRUCTION—LB & CA

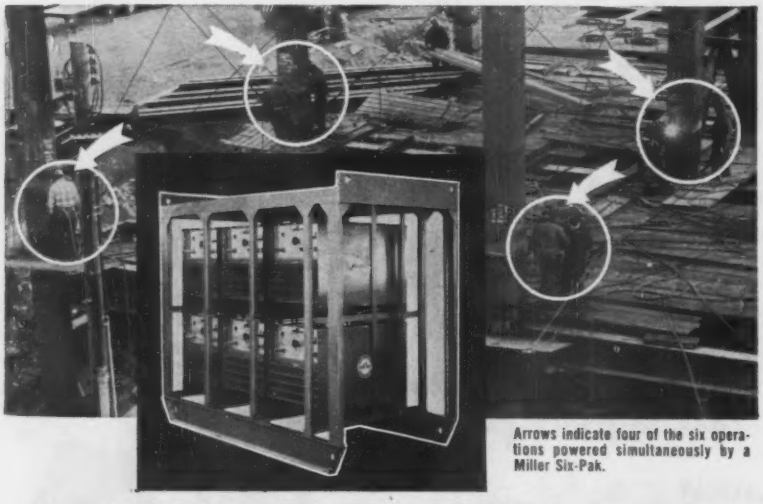
▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, ROADS, **Western Contracting Corp.**, 400 Benson Bldg., Sioux City, Zone 16, Iowa, CA **$3,021,360**, conc. paving 10.012 mi. I-29, L-29-2 (7) 47 and I-29-1 (11) 45, Pierre, Lincoln and Union Counties; CA **$2,813,416**, conc. paving 7.965 mi. I-29, I-29-1 (14) 37, Pierre, Union Co. BA 10/3/61, CA 10/17/61. CD 10/6/61, under LB.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Ia., CA **$5,864,828**, SPILLWAY and ACCESS BRIDGE, Big Bend Dam, Fort Thompson, CIVENG-25-066-62-12, SOUTH DAKOTA. U. S. Eng., 217 North 17 th St., Omaha 2, Neb. BA 10/10/61. CD 10/16/61, under LB.

▲† **Paul Hardeman**, 10579 Dale Ave., Stanton, Calif., LB **$4,025,000**, completing Eufaula Dam POWER-HOUSE, CIVENG-34-066-62-15, OKLAHOMA. U. S. Eng., Box 61, Tulsa 2, Okla. BA 10/24/61. CD 9/12/61.

▲ **Amis Constr. Co.**, 1647 Exchange Ave. Oklahoma City Okla., and **Paul Hardeman, Inc.**, 10579 Dale Ave., Los Angeles, Calif., CA **$4,749,000**, SIX PUMPING STATIONS, HEADQUARTERS BLDG., Atoka Water Pipe Line, OKLAHOMA CITY, OKLA. Oklahoma Municipal Improvement Auth., First National Bldg., Oklahoma City 2, Okla. BA 10/11/61, CA 10/19/61. CD 10/16/61, under LB.

▲† **T. L. James & Co., Inc.**, P.O. Box 8, Kenner, La., CA **$1,894,645**, 2 mi. 5 million cu. yds. materials, DREDGING Houston Ship Channel, Carpenter Bayou to Patrick Bayou, ENG-41-243-62-5, Houston, TEXAS. U. S. Eng., P.O. Box 1229, Galveston, Tex. BA 9/19/61. CD 10/9/61, under LB.



Arrows indicate four of the six operations powered simultaneously by a Miller Six-Pak.

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And more and more engineers know it. Miller's latest development for the industry is the above Six-Pak comprised of six Gold Star SRH-444 rectifier type d-c welders. Featuring the exclusive Miller rectifier, these weld stations will probably revolutionize parts of the building industry as their speed, versatility, and economy open new possibilities never feasible with motor generator set-ups. Frame is built to construction trade standards and there's a choice of 200, 300 or 400 ampere welders in either the Six-Pak as shown or the Three-Pak.

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Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

BUILDINGS—LB & CA

▲† **Electronic & Missile Facilities, Inc.**, 2 Lafayette Sq., New York, N. Y., CA **$7,597,000** extension and remodeling POST OFFICE and CUSTOM HOUSE, 180 E. Kellogg Blvd., ST. PAUL, MINN. General Services Admin., Region 6, 2306 E. Bannister Rd., Kansas City 10, Mo. BA 9/20. CD 9/25/61, under LB.

▲ **R. O. Wheeler**, First National Bldg., Tulsa, Okla., CA est. **$2,000,000**, 200 bed GERIATRICS HOSPITAL, 19th and Utica Sts., TULSA, OKLA. Ainslee Perault, First National Bldg., Tulsa, Okla. Stanfield, Imel & Walton, 3615 S. Harvard St., Tulsa, Okla. archts. BA 10/11/61.

▲ **Holford Constr. Co.**, 5630 Dyer St., Dallas, Tex., CA **$3,250,000**, 217-unit masonry APARTMENT, Maple Ave., DALLAS, TEX. Fleetwood Square, Inc., 4540 Lorraine Ave., Dallas, Tex. Lawrence F. Peeler & Assocs., 6310 Denton Dr., Dallas, Tex., archts.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Calif., Castle Air Force Base**—BA 11/28—U. S. Eng., 1209 8 St., Sacramento, COMPOSITE MEDICAL FACILITIES, Castle Air Force Base, Spec. No. 2780, ENG 04-167-62-14. $2,000,000. Extended date. CD 10/20/61.

BUILDINGS—BA

▲ **Calif., Los Angeles**—BA 11/21—Regents of the University of California, at Los Angeles, 405 Hilgarde St., RESIDENCE HALL No. 4, University of California at Los Angeles. $4,130,000. CD 6/23/61.

▲ **Calif., Los Angeles**—BA 11/28—Music Center Lease Co., c/o Bd. Supervs. Los Angeles Co., 500 W. Temple St., lease-build MEMORIAL PAVILION and UNDERGROUND GARAGE, Civic Center. $18,000,000. Extended date. Welton Becket Assoc., 10000 Santa Monica Blvd., archts. CD 10/16/61.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 N St., Sacramento, ROAD,
Gordon H. Ball, Gordon H. Ball, Inc., 300 Camille Ave., Danville, Calif., CA **$6,036,000**, grading, paving 5.3 mi. six lane freeway US Hy. 99 between south of Mine Ave. and Olive Dr., Bakersfield, Kern Co. BA 10/11. CD 10/16/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROAD,
Gallagher & Burk, Inc., 344 High St., Oakland, Calif., CA **$1,899,212**, pave 1.7 mi. four lane freeway on Jackson St. (State Rte. 105) from Harder Rd. to Mission Blvd., Castro St., Alemeda Co. BA 10/4. CD 10/9/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 10/18, ROAD,
R. A. Westbrook, Inc., Morrison-Knudsen Co., Inc. and **Richard N. Moseman**, 6431 Elvas Ave., Sacramento, Calif., LB **$6,079,939**, (6 bidders), 5.5 mi. freeway US Hy. 99 in and south of Fresno, Fresno Co. CD 9/13/61.

▲† **Case-Hood Constr. Co.**, Bldg. 1429, Chico Municipal Airport, Chico, Calif., LB **$1,765,946**, (7 bidders), EARTHWORK, PIPE LINE, STRUCTURES and RESERVOIRS, Diamond Springs Main, feeder line and laterals 1.8N, 3.3N, 3.6N, 5.9N and 6.9N, El Dorado Sys., near Placerville, El Dorado Co., American River Div., Central Valley Proj. Spec. No. DC 5667, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Placerville, Calif. BA 10/19. CD 9/15/61.

▲ **Sonoma County Flood Control and Water Conservation Dist.**, County Admin. Bldg., 2555 N. Mendocino Ave., Santa Rosa, Calif., rejected bids Aug. 28, CLEARING, EXCAV., EMBANKMENT, CONCRETE WORK, PIPE, etc. Santa Rosa Creek Reservoir and Spring Creek Dam and Diversion near Sonoma, Sonoma Co., CALIFORNIA. LB **$1,824,669**. Will re-advertise. CD 9/8/61, under LB.

▲ **Cameron Bros.**, 10510 Prospect, Santee, Calif., LB 1A, **$1,394,448**, LB 1B, **$1,485,949**, (6 bidders), Sch. 1, A&B, SEWAGE COLLECTION TREATMENT and DISPOSAL SYS. Portion Interceptor Sewer, Contr. 1, SAN DIEGO, CALIF. City, Rm. 161, Civic Center Bldg., San Diego 1, Calif. BA 10/18. CD 9/19/61;
Vido Artukovich & Son, 16200 S. Atlantic Ave., Paramount, Calif., LB **$2,862,177**, (3 bidders), Sched. II, FORCE MAINS, Contr. 1, LB **$120,010**, (8 bidders), Sched. 3, SLUDGE LINE, Contr. No. 1 (San Diego, Calif.).

BUILDINGS—LB & CA

▲ **Gale M. Roberts**, 338 W. 11th St., Eugene, Ore., CA **$2,000,000**, RETIREMENT HOME, EUGENE, ORE. Ozanam Corp., 18th and Pak Patch Rd., Eugene, Ore. Wilmsen, Endicott & Unthank, 863 13th Ave. E., Eugene, Ore., archts. CA 10/20/61.

▲ **Hercules Powder Co.**, Delaware Trust Bldg., Wilmington, Del., Owner Builds, OIL FRACTIONING PLANT, PORTLAND, ORE.

▲ **Rinker Development Corp.**, 10600 Katella, Gardena Grove, Calif., Owner Builds, **$3,025,000**, 22 stucco APARTMENTS, 126 S. Westchester, Tract 3886, ANAHEIM, CALIF

▲ **Forsberg & Gregory**, P.O. Box 831, Redlands, Calif., CA **$2,037,754**, Imperial Valley COLLEGE CENTER, IMPERIAL, CALIF. Imperial Junior College Dist., 600 W. Main St., Imperial, Calif. BA 10/19. CA 10/20. CD 10/23/61, under LB.

(Continued on page 86)

Twin-engine rigs can't beat Payscraper® yardage!

"Hauling to a fill up a 5% grade, the International 295 Payscraper travels and dumps as fast as our twin-engine scrapers—matches their yardage, too!"

R. H. Godwin, Sup't
C. C. Mangum, Inc.
Raleigh, N. C.

"Production of our 495 Payscraper is equal to the twin-engine units running in the same cycle. The 495 is an ideal long-haul rig!"

W. W. Gibson, V. P.
Gibson Construction Co.
Donalsonville, Ga.

Two separate earthmoving jobs, involving big yardage and long hauls, recently compared dirt-on-fill production of big-capacity scrapers. Results were startling. On one job, a 2-axle International 295 Payscraper matched a comparable-size twin-engine rig yard for yard. On the other job, production figures told the contractor he equalled twin-engine scraper production with his less expensive 3-axle International 495 Payscraper—and at a much lower operating cost!

Power is put to better use in the Payscraper to give you a quick-loading, fast-hauling, clean-dumping rig. In the cut, large planet gears in the final drive handle full torque loads imposed by the turbocharged 375-hp diesel engine, while the 7-speed power shift transmission adjusts torque and load to speed, gets you out fast. On the haul road, positive power control of all operations, with speeds to 33 mph, permits full performance with heaped loads. Exclusive rack-and-pinion design and forward spindle pitch turns the 295 Payscraper safely, with automotive ease. At the dumping site, the big 94-in. apron opening and two ejector plate push members assure positive ejection of the whole 34-yd. load. Positive, pto-driven cable control unit is finger tip controlled.

Compare loading, roading and dumping cycles with any other rig, and you'll see how Payscraper efficiency increases earthmoving profits. Call your International Construction Equipment Distributor today and let him show you what the 2-axle 295 or the 3-axle 495 can do on your job!

International® *Construction Equipment*

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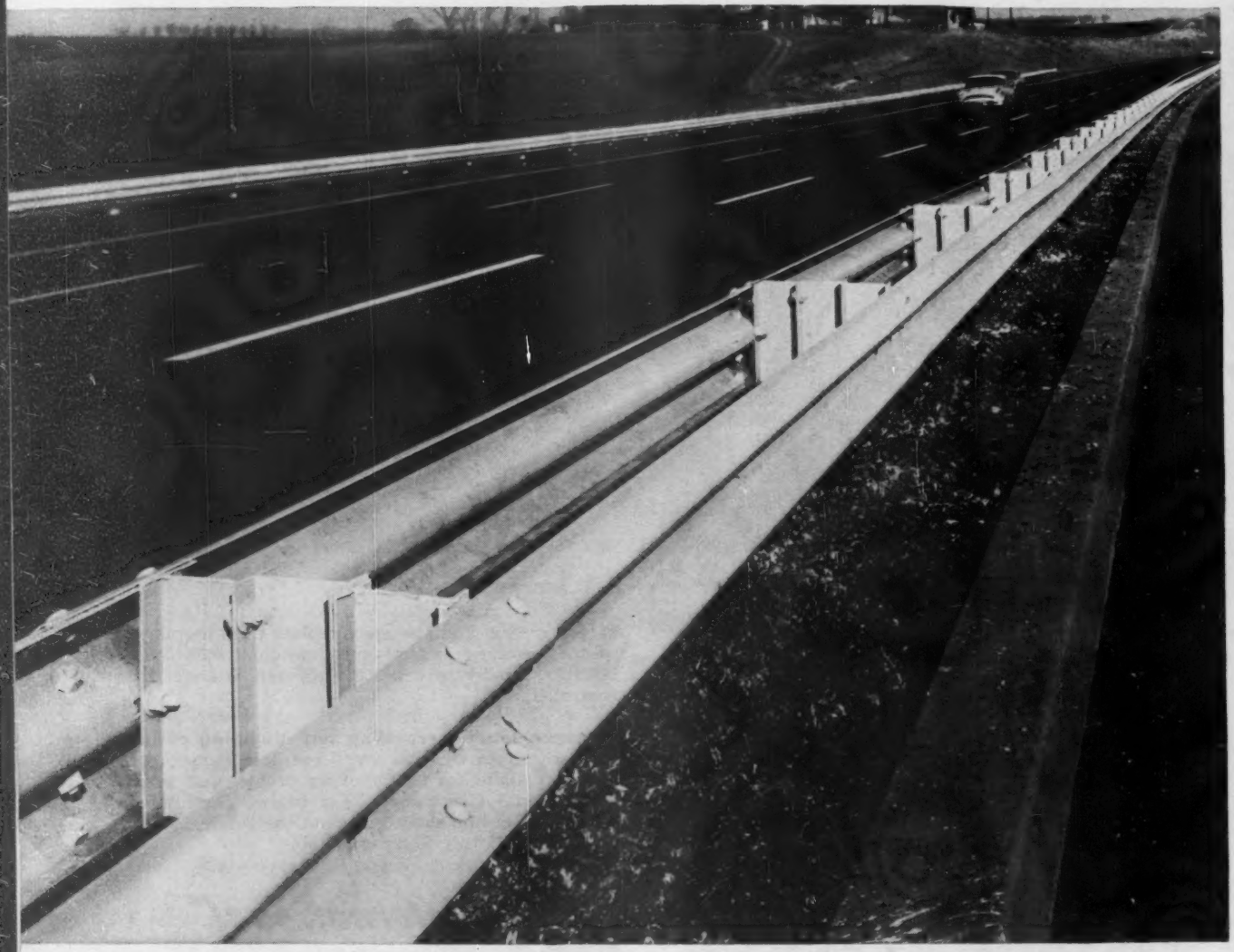
A COMPLETE POWER PACKAGE

MORE STRENGTH... LESS DANGER

USS AmBridge Highway Beam Guard Rail has been adopted by most state highway departments because it's built *extra-strong* to withstand high-impact forces. And, it's bolted together to *stay* together with tough $\frac{5}{8}$" bolts that conform to ASTM A-307. USS AmBridge Beam Guard Rail will save maintenance money. Paint sticks better because all mill scale is removed *before* forming and all sections are degreased, rinsed, oven-dried and specially primed before painting. USS AmBridge Beam Guard Rail is available in 25-foot lengths for minimum splicing as well as the standard 12½-foot lengths.



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MORE STRENGTH... LESS WEIGHT

USS I-Beam-Lok Flooring is about the most durable road surface made, and it's about the lightest. Because it's steel, maintenance is almost negligible. Because it's light, foundations and substructures can be made lighter and less expensive. Wind resistance is cut down and snow removal is no longer a problem with open web design. You can actually increase the load limits on existing bridges when you replace the old roadway with new, lightweight, open web I-Beam-Lok. You save installation time and money because all work is done *topside*—no need to build scaffolds or erect forms. USS I-Beam-Lok Flooring is available in 5″ open and 4¼″ and 3″ concrete-filled designs.

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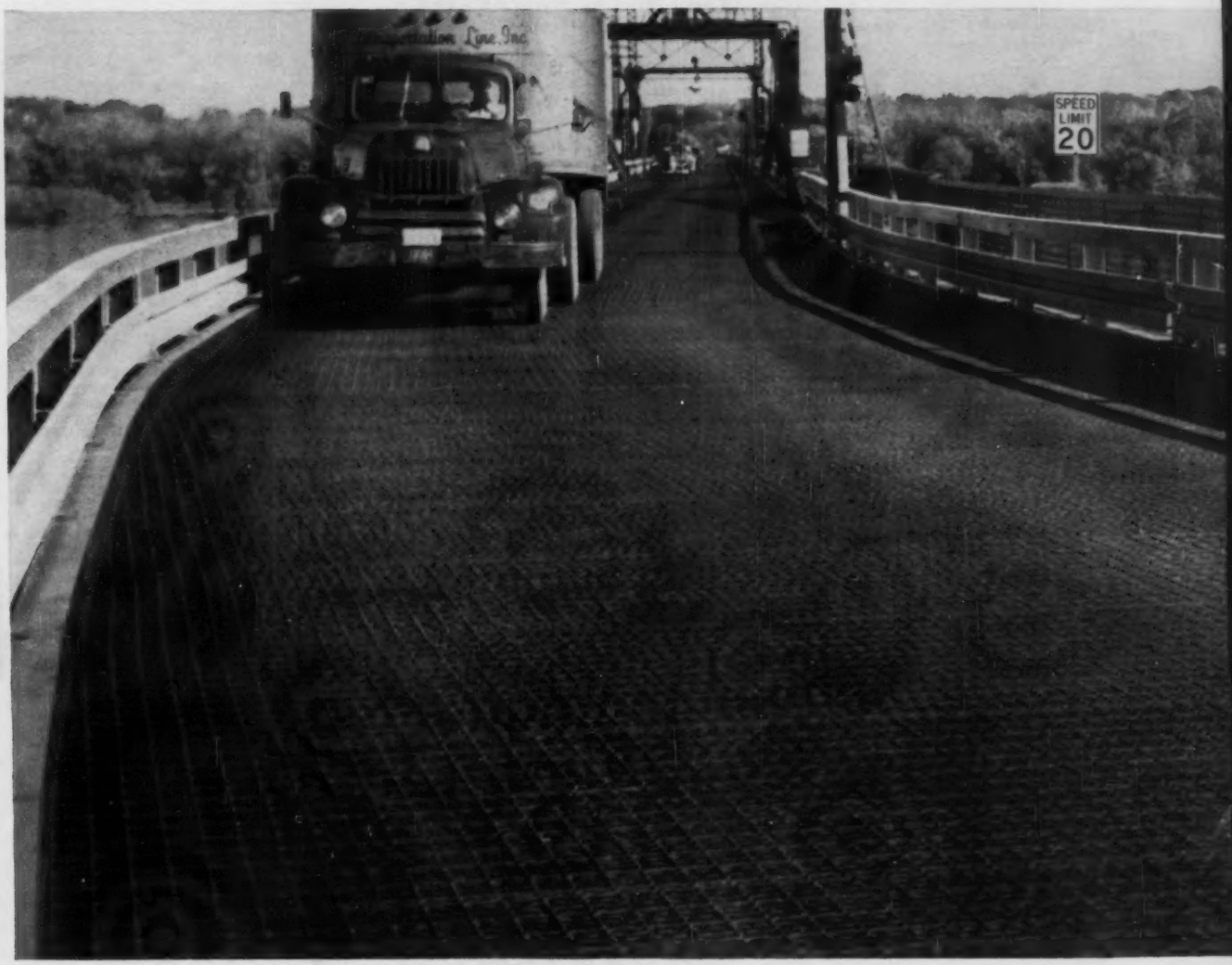

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USS

American Bridge Division of United States Steel

(Continued from page 82)

▲ **National City Development Co.**, 3800 East Coast Hy., Corona Del Mar, Calif., Owner Builds, $2,068,615, 158 RESIDENCES, NATIONAL CITY, CALIF.

▲ **Trepte Constr. Co., Inc.**, 1402 Murray Canyon Rd., San Diego, Calif., CA $3,891,312, general contr. CLASSROOM BLDG. No. 1, San Francisco State College, W.O. AD 12 011 C, NORTHRIDGE, CALIF. State Dpt. P. Wks., 1120 N St., Sacramento, Calif. BA 10/11. CA 10/20. Grand total $5,356,112. CD 10/16/61, under LB;
Steiny & Mitchel, Inc., 221 N. Ardmore Ave., Los Angeles 4, Calif., CA $750,000, electrical work CLASSROOM BLDG. NO. 1, Fernando State College, W.O. AD 12 011C (Northridge, Calif.). CD 10/18/61, under LB;
Air Conditioning Co., Inc., 6265 San Fernando Rd., Glendale, Calif., CA $714,800, heating work, CLASSROOM BLDG. NO. 1, Fernando State College, W.O. AD 12 011C (Northridge, Calif.). CD 10/18/61, under LB.

CANADA

BUILDINGS—BA

▲ **Ont., Port Arthur**—BA 11/7—Port Arthur Bd. Educ., VOCATIONAL HIGH SCHOOL, Clarkson Ave. $2,225,000. Smith, Carter, Searle Assocs., 231 Arthur St., archts.-engrs. CD 6/7/61.

▲ **Ont., Toronto**—Bids Asked—Massey Foundation, c/o University of Toronto, Simcoe Hall, 3 story, approx. 80,000 sq. ft., red brown brick, concrete, screens on exterior GRADUATES RESIDENTIAL COLLEGE, Devonshire Place and Hoskin Ave. $1,750,000. Thompson, Berwick & Pratt, 1553 Robson St., Vancouver, B. C., archts. Hancock, Little, Calvert Assoc., 40 Irwin Ave., assoc. archts. CD 2/24/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Canadian General Electric Co., Ltd.**, 214 King St. W., Toronto, Ont., CA Est. $3,000,000, three units, each 115,000 KVA MAIN GENERATORS to produce about 500,000 h.p. Grand Rapids Hydro Development, Grand Rapids, MANITOBA, Manitoba Hydro-Electric Bd., P.O. Box 815, Winnipeg, Man.;
Dominion Bridge Co., Ltd., P.O. Box 895, Winnipeg, Man., CA Est. $433,000, half Brandon-Rosser 230 KV STEEL TOWER TRANSMISSION LINE, Brandon (Manitoba);
Italian Economic Corp., 1425 Mountain St., Montreal, Que., CA Est. $380,000, half Brandon-Rosser 230 KV STEEL TOWER TRANSMISSION LINE Brandon (Manitoba). Grand total Est. $3,813,000. CD 2/8/60.

BUILDINGS—LB & CA

▲ **Burns & Dutton Concrete & Constr. Co., Ltd.**, 1351 Vulcan Way, Richmond, B. C., LB $2,623,000 (10 bidders), steel, concrete south and west HOSPITAL WINGS, renovating central block HOSPITAL ADDNS., VICTORIA, B. C. **Royal Jubilee Hospital**, 1900 Peel St., Victoria, B. C. BA 10/6/61. CD 9/5/61.

▲ **Ad. Deslaurier & Fils Ltee**, 385 Dupuy St., Quebec City, Que., CA Est. $2,000,000, 6 story, rein.-con. STUDENTS RESIDENCE, near Pavillon Biermans-Mcreau, QUEBEC CITY, QUE. Laval University, Quebec City, Que. Fiset & Deschamps, 50 St. Jean St., Quebec City, Que., archts. Paul Henri Filion, 2987 Matapedia, Quebec City, Que., engrs. CD 9/27/61.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **INDONESIA**—Republic of Indonesia, Djakarta, ROAD, **Morrison-Knudsen of Asia, Inc. (Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, U. S. A.) and **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., U. S. A., CA $6,370,000, grading, paving, bridges and drainage 12 mi. two lane Djakarta By-Pass Superhighway from Djakarta south to Tandjung Priok to connect with Djakarta-Bojor Hy., near Tjilitan.

BUILDINGS—LB & CA

▲ **Bechtel International Corp.**, 485 Lexington Ave., New York 17, N. Y., U.S.A., CA Est. $4,000,000, 8 story, 320-room HOTEL, SWIMMING POOL, DUBLIN, EIRE. Irish & Intercontinental Hotels Ltd., Dublin, Eire. CD 2/21/61.

▲ **Bechtel International Corp.**, 485 Lexington Ave., New York 17, N. Y., U.S.A., CA Est. $7,000,000, air-conditioned HOTEL, Clifton Area, KARACHI, WEST PAKISTAN. Intercontinental Hotels Corp., 135 E. 42 St., New York, N. Y., U.S.A., and Pakistan International Air Lines, Karachi, West Pakistan. CD 3/7/61.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., El Paso**—City of El Paso, Public Service Div., City Hall, defeated bonds Oct. 7, WATER-STORM SEWERS-SANITARY SEWERS-GAS SEWERS, etc., Public Service Bd. Imprvts. $32,000,000. CD 9/19/61.

SEWERS, WASTE DISPOSAL

▲ **Mont., Billings**—City of Billings, City Hall, STORM SEWERS. $2,885,250. Morrison-Maierle, 647 Main St., consult. engrs. CD 5/3/61.

▲ **Wash., Bellevue**—Eastgate Sewer Dist., $4,000,000 bond election Nov. 21, SANITARY SEWER FACILITIES, Eastgate Area, Hill & Ingram, 3108 Western Ave., Seattle, consult. engrs. CD 11/14/60.

STREETS AND ROADS

▲ **ARKANSAS**—State Hy. Comn., Hy. Bldg., Capitol Mall, Little Rock, ROAD,
Pulaski Co.—Eighth Street Expressway connecting Interstate Hy 30 with proposed U. S. Hy. 67-70 bypass west of Little Rock, $13,200,000. Garver & Garver, Wallace Bldg., Little Rock, consult. engrs. Bids 1963.

▲ **OKLAHOMA**—Oklahoma Turnpike Auth., 400 N. Walnut St., Oklahoma City, ROAD,
Oklahoma Co.—Southwest Turnpike, Oklahoma City via Lawton to Texas State Line has been approved by Supreme Court. Bond Sale Authorized. $56,500,000. De Leuw, Cather & Co., 150 Wacker Dr., Chicago, Ill., consult engrs. Bids 1962.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROADS,
Butler Co.—7.3 mi. sect. of Pittsburg-Erie Expressway from Butler-Allegheny County Line north, two 12 ft. lanes on each side of an 84 ft. medial area w/10 ft. paved shoulders on outside lanes and 4 ft. stabilized shoulder on inside lanes, Interstate Rte. 79. $7,000,000. Clarke & Rapuano, 830 Third Ave., New York, N. Y., consult. engrs. F. S. Poorman, c/o owner, staff engr. CD 2/23/60.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROAD,
Cumberland Co.—widening, improving 7.67 mi. Rte. 11, between Camp Hill and Carlisle, incl. two lane bypass at New Kingston. $2,700,000. R. W. Lowry, 227 Pine St., Harrisburg, consult. engrs. CD 4/4/60.

EARTHWORK, WATERWAYS

▲ **Pennsylvania and New Jersey**—U. S. Eng., 111 E. 16th St., New York 3, N. Y., 40 ft. channel, Delaware River, Phila., Naval Base to Trenton. $12,000,000 (appropriated).

AIRPORTS

▲† **Ga., Albany**—U. S. Eng., P.O. Box 889, 200 E. St. Julian St., Savannah, AIRCRAFT OPERATIONAL APRON, RUNWAY APPROACH LIGHTING, PAVING, AUTO MANTENANCE SHOP, NCO and OFFICERS MESS BLDGS., CD 7/21/61; SERVICE CLUB, CD 9/13/61; SITE WORK or fuels systems repair dock, Turner Air Force Base. $3,627,000 (appropriated).

▲ **N. Y., Idlewild**—Port of New York Auth., 111 8 Ave., New York, Zone 11, 2,000 ft. TAXIWAYS, 0.5 mi. divided hy., for 200 ft. bridges, 1 mi. SERVICE ROADS to eliminate aircraft taxiway grade crossing at 150th St. approach, New York International Airport. $6,207,700.

▲ **Pa., Pittsburgh**—Allegheny County, 5th and Grant St., plans by Joseph Hoover, 333 Blvd. of Allies, Pittsburgh MAINTENANCE BASE, Greater Pittsburgh Airport, for Allegheny Air Lines. $4,000,000. CD 7/20/61.

UNCLASSIFIED

▲ **N. Y., Brooklyn**—Port of New York Auth., 111 8 Ave., New York, Zone 11, N. Y., 750 and 630x320 ft. 176,800 sq. ft. shedded space PIER 9A, Kane St. in Baltic Terminal Area and 700 and 650x320 ft. 176,800 sq. ft. shedded space PIER 9B, Sedgwick St. north of Battery Tunnel, Buttermilk Channel. $11,144,900. CD 11/1/55.

▲† **Va., Portsmouth**—Fifth Naval Dist., U. S. Naval Base, Norfolk, IMPRVTS. NAVAL SHIPYARD. $2,800,000 (appropriated).

▲ **Ont., Port Credit**—Dpt. P. Wks., Sir Charles Tupper Bldg., Riverside Dr., Ottawa, HARBOR IMPRVS., incl. 160,000 sq. ft. warehouse, office, 1,000 ft. breakwater extension, dredging turning basin, $2,500,000. CD 2/8/56.

PUBLIC BUILDINGS

▲ **Ala., Huntsville**—U. S. Eng., P.O. Box 1169, 2301 Airport Blvd., Mobile Zone 7, BUILDINGS, electrical work, Redstone Arsenal, $4,500,000 (appropriated).

▲ **Calif., Garden Grove**—Garden Grove Union High School Dist., 11171 Dale St., plans by Blurock, Ellerbroek & Assoc., 2515 E. Coast Hy., Corona Del Mar, 158,197 sq. ft. Garden Grove HIGH SCHOOL NO. 5. $2,600,000. CD 10/12/61.

▲ **Calif., San Diego**—San Diego Unif. School Dist., 4100 Normal St., Zone 3, plans by Frank L. Hope & Assoc., 1477 6 Ave., Zone 1, 225,000 sq. ft. Kearney Mesa JUNIOR COLLEGE, incl. administration bldg., art bldg., central service bldg., home economics and vocational nursing bldg., library, medical-dental, language arts, music-drama, life science and physical education, technical bldg., etc. $4,000,000. CD 6/13/60. Bids 1962.

▲ **Colo., Fort Collins**—Larimer County School Dist. R-1, 317 S. College Ave., defeated $3,600,000 bonds Oct. 10, HIGH SCHOOL, 2311 Laport Ave. CD 8/11/61.

▲† **Conn., Groton**—Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y., plans by Pedersen & Tilney, 119 Whitney Ave., New Haven, 250 units CAPEHART HOUSING PROJECT. $4,000,000. CD 12/8/60.

▲† **Conn., Groton**—Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y., plans by Fletcher-Thompson, Inc., 299 Washintgon Ave., Bridgeport, 200 units Military Construction FAMILY HOUSING, Gungywamp Rd. $3,460,000. CD 9/1/61.

▲† **D. C., Wash.**—General Services Admin., 19th and F Sts. N.W., plans by Curtis & Davis Associated Engineers & Architects, 331 Madison Ave., New York, N. Y., Fordyce & Hamby, 70 W. 40 St., New York, N. Y., and Frank Grad & Sons, 11 Commerce St., Newark, N. J., two OFFICES, with connecting pedestrian underpass on 10th St. Mall for Federal Office Bldg. 5. $36,200,000. CD 11/29/60.

▲ **Mich., Grand Rapids**—Grand Rapids Public Library Bd., plans by Robinson, Campau & Crowe, Inc., 738 Michigan Trust Bldg., Ryerson LIBRARY ADDN. $2,700,000. CD 1/22/57.

▲ **Mo., Champ (St. Louis 24 P.O.)**—Village, 8801 Bangert Pl., Berkeley 34, Mo., 1 story, 200,000 sq. ft. INDUSTRIAL PLANT. $3,000,000. R. C. Can Co., 9430 Page Ave., Overland 14, Mo., lessee. Bids early 1962.

▲ **N. J., Belleville**—Bd. Educ., Town of Belleville, 183 Union Ave., defeated referendum Oct. 17, HIGH SCHOOL. $2,750,000. Alfonson Alvarez, 204 Bellevue Ave., Upper Montclair, archt. CD 9/8/61.

▲ **N. J., Jersey City**—Bd. Freeholders Hudson Co., Administration Bldg., 595 Newark Ave., plans by Comparetto & Kenny, 880 Bergen Ave. d, ADMINISTRATION BLDG. ADDN. at site. $3,448,500. Harwood & Gould, 233 W. 42nd St., New York 36, N. Y., struct. engrs. Fred C. Meyer Assocs., 440 Rochelle Ave., Rochelle Park, Mech. engrs. CD 10/10/61.

▲ **N. J., Woodbridge**—Bd. Educ. Twp. Woodbridge, Barron Ave., referendum bonds and project Dec. 5, SENIOR HIGH SCHOOL, $3,000,000, Wiedersum Assoc., 65 Roosevelt Ave., Valley Stream, N. Y., archts.; HIGH SCHOOL ADDN., $500,000, Merchant Seidel & Hickey, 1 Elm Row, New Brunswick, N. J., archts. CD 5/22/61.

▲ **O., Akron**—City, City Hall, plans by William A. Gould, 1404 E. 9th St., Cleveland, Zone 14, four-tier, 1,650 car PARKING DECK, site of old Quaker Oats Plant. $4,100,000. Joseph K. Knoerle & Assocs., 210 N. Calvert St., Baltimore, Md., consult. engrs. CD 5/8/61.

▲ **O., Cincinnati**—Colerain Twp. Local School Dist., 4850 Poole Rd., plans by Sullivan, Isaacs & Sullivan, 1800 Reading Rd., Reading, HIGH SCHOOL, Cheviot Rd., ELEMENTARY SCHOOOL, Hamilton Ave., $2,500,000. Bids late 1962. (Name of owner changed.) CD 8/4/61, under Northwest Local School Bd. Educ., as owner.

▲ **Okla., Fort Sill**—U. S. Eng., Box 61, Tulsa, plans by Coston-Frankfurt & Short, archt.-engrs., 323 E. Madison St., Oklahoma City, 250-bed, masonry HOSPITAL. $6,750,000. CD 10/5/61.

▲ **Okla., Tulsa**—Tulso Co. Comrs., Courthouse, $3,800,000 bond election Nov. 14, LIBRARY. CD 12/20/60.

▲† **Tex., Fort Hood**—U. S. Eng., P.O. Box 1600, Fort Worth, BUILDINGS, UTILITIES, $3,054,000 (appropriated). CD 9/8/58.

▲ **Tex., Houston**—City of Houston, City Hall, HEALTH. $3,500,000. Site not selected. CD 1/6/61.

▲ **Wash., Spokane**—City, City Hall, CITY HALL, PUBLIC SAFETY BLDG., CONTROL CENTER for civil defence operations, $9,000,000.

▲† **Wis., Wood**—Veterans Admin., Munitions Bldg., Wash., D. C., Phase II, CONVERT EXISTING HOSPITAL BLDGS. to DOMICILIARY USE. $11,000,000 (no appropriation). CD 3/14/56.

▲ **Alta., Edmonton** — Alberta Government, Parliament Bldgs., 11 story, Y shaped, steel, concrete RESIDENCES, University of Alberta campus, $9,000,000; CENTRAL FOOD SERVICES BLDG., University of Alberta campus, $2,500,000. CD 8/4/61.

▲ **Ont., Ottawa**—Dpt. P. Wks., Sir Charles Tupper Bldg., Riverside Dr., Ottawa, DEPARTMENT OF TRANSPORT BUILDING, Bronson Ave. and Heron Rd., Confederation Heights, $6,000,000.

COMMERCIAL BUILDINGS

▲ **Ala., Mobile**—Alabama Baptist Convention, 4013 Sierra Drive, plans by Platt Roberts, Merchants National Bank Bldg., MOBILE COLLEGE, general classroom administration building, classroom, teaching auditorium, science building, health and physical education bldg., library, religious education bldg., chapel, student center, presidents house, men's and women's dormitories, married students' housing, nursery school, athletic field, two intramural fields, play field, develop lake, boathouse, on 400 acres east of Hy. 45, $3,000,000-$5,000,000. Olmsted Associated, 99 Warren St., Brookline 46, Mass., Landscape archt.

▲ **Calif., San Francisco**—Eichler Homes, Inc., 2151 St. Francis Dr., Palo Alto, plans by Claude Oakland, 109 Stevenson St., San Francisco, 224 DWELLINGS, four-12 story CO-OPERATIVE APARTMENTS, community bldgs., swimming pools, Visitacion Valley. $16,000,000. To go ahead 1961.

▲ **Conn., Plainville**—Arthur Primus, 40 Jasmine Lane Wolcott, 300 HOUSES, Hilltop Homes, Camp St. $3,000,000. Primus & Welti, 2846 Main St., Glastonbury, engrs. Bids April 1962. CD 3/2/60.

▲ **D. C., Wash.**—Parkwood Inc., 404 E. Montgomery Ave., Rockville, Md., plans by Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., 650 room MOTOR HOTEL and 250,000 sq. ft. OFFICE BLDG., Constitution Ave., and 3rd St. N.W. $28,000,000.

▲ **Kan., Wichita**—Osteopathic Hospital, c/o Howard Bevelhymer, 1841 West 27th St., North, plans by W. I. Fisher, 301 South Main St., 210-bed HOSPITAL incl. quarters for nurses, interns, etc., McLean Blvd. and Central St. $3,000,000.

(Continued on page 88)

Sister quarries share Michigan Tractor Shovel fleet, report

6 machines do the work of 12

At McDonough Brothers' two quarries near San Antonio, Texas, six Michigan Tractor Shovels are doing the material handling normally assigned a fleet of loaders *and dozers* at least twice as big.

Power, speed, and capacity of their five 262 hp, 4½ yard Model 275A Michigans take care of all the heavy work (except shot rock loading) at both quarries, both crushers, and at an adjacent 7500 lb continuous-mix bituminous plant . . . while a smaller 1¼ yd Model 75A stockpile-loads the 4 and 6 yd trucks and handles scattered odd jobs.

All told, the Michigans regularly handle eight major jobs:

Load all trucks hauling stockpiled materials produced by both crushing plants . . . twenty-four or more separate stockpiles.

Dress all stockpiles.

Load one-third of all 70 ton railroad gondola cars at both plants.

Replace donkey engines for moving and spotting gondolas.

Load all trucks hauling aggregates and sand to charge the bituminous plant.

Truck-load finished bituminous materials.

Clean quarry floors after blasting and push shots up to the heavy rock shovels for loading.

Maintain all haul roads in all plant areas.

Loading time on all these assignments has proved exceptionally fast. A typical 12 yd semi is loaded in only 3 passes of a Model 275A's 4½ yd bucket *and an average of 72 seconds.* A typical 70 ton gondola car is loaded in 5 minutes or less.

McDonough Brothers purchased their first Michigan five years ago—a Model 175A with 2¾ yd bucket. Three years, and over 10,000 meter hours later, it was traded for a larger Model 275A. Then expanding operations, combined with Michigan's excellent performance, caused the addition of four more Model 275A Michigans and one Model 75A to bring the fleet up to present strength.

Typical of the performance turned in by the Michigan today is an hourmeter reading taken at random from one Model 275A. In 17 months of operation, it showed 4,915 hours —an average of 66.4 hours worked each week since purchase.

Co-owners Jim, Dan and John McDonough are completely satisfied with their Michigan units. "Michigan Tractor Shovels have proven highly successful in our quarry operations," reports Jim McDonough, "And we like the dealer service organization (Waukesha Sales & Service, Inc., San Antonio, Texas) behind them."

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2401 Pipestone Road
Benton Harbor 2, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

(Continued from page 86)

▲ **Ky., Covington**—George Kreutzjans, 13 Augusta, Fort Wright, Covington, 500 two story, bsmnt., brick split-level HOMES, Dudley Pike and Charter Oak Rd. $12,500,000. Noel Walton, 210 Bellview Rd., Burlington, consult. engr. Bids Spring 1962.

▲ **La., New Orleans**—Harry J. Spiro, Frank DeLabarre, M. R. Fletcher, 805 Helois Ave., Metairie, 230,000 sq. ft. SPORTS CENTER, Veterans Memorial Hy. $4,000,000.

▲ **Md., Carrollton**—Food Fair Properties, Inc., 355 Lexington Ave., New York 17, N. Y., 160,628 sq. ft. Carrollan Plaza SHOPPING CENTER, U. S. Rte. 50 and 85 Ave. $3,000,000.

▲ **N. J., Dunellen**—Washingtonville Estates, Inc., 260 Valley Dr., Watchung, plans by Albert Meiniker, 55 Central Ave., Staten Island, N. Y., 150 unit garden APARTMENT, Mountain Blvd. and Anderson Rd. Green Brook Township. $2,750,000.

▲ **N. J., Hazlet**—Lamond Constr. Co., Inc., 110 West 42 St., New York 36, N. Y., plans by Leo Kabis, 5 East Main St., Denville, HOSPITAL, Holmdel-Keyport Rd., Raritan Twp. $3,500,000. Vogelbach & Baumann, U. S. Hy. 22, Scotch Plains, N. J., consult. engrs. Karl Heuser, 121 Main St., Matawan, N. J., preliminary engr. CD 9/27/61.

▲ **N. Y., Mineola**—Nassau Hospital, 2nd St., plans by Ferrenz & Taylor, 1451 Broadway, New York, Zone 36, 6 story HOSPITAL ADDN., 1 story AUDITORIUM, alterations to existing BLDG. $3,900,000. Jaros Baum & Bolles, 415 Lexington Ave., New York, Zone 17, struct. engrs. CD 4/25/61.

▲ **N. Y., New York**—First Ave. Realty Corp., 12 E. 48 St., Zone 17, plans by Philip Birnbaum, 12 E. 48 St., Zone 17, 18 story, penthouse APARTMENT, 341-343 E. 75 St., 1445-1459 1 Ave. $3,500,000.

▲ **N. Y., New York**—David W. Frankel, 654 Madison Ave., Zone 21, will not construct 34 story, 450 unit APARTMENT, 1155-67 1st Ave. between E. 63 and E. 64 Sts. $10,000,000. Project abandoned. CD 4/13/61.

▲ **N. Y., New York**—Galan Realty Corp., 66 Court St., Brookyln, Zone 2, plans by Lawrence M. Rothman, 103 E. 125 St., Zone 35, 20 story, 104x125 ft. APARTMENT southwest corner Third Ave., 170-78 E. 32 St. $3,200,000. Hugh Conti, 171 Madison Ave., Zone 16, struct. engr.

▲ **N. Y., New York**—Frank and Vincent Grasso, 980 2 Ave., Zone 22, plans by Geo. G. Miller, 505 5 Ave., Zone 17, 12 story 226 unit APARTMENT, 325-343 E. 56 St. $2,500,000.

▲ **N. Y., New York**—96 Fifth Ave., Inc., 630 3 Ave., Zone 17, plans by Leo Stillman, 332 E. 149 St., Zone 51, APARTMENT, 92-96 5 Ave. and 2-6 W. 15 St. $2,900,000.

▲ **N. Y., New York**—Pramwic Constr. Corp. and Bims Assocs., 215 E. 204 St., Zone 58, plans by Ralph E. Leff, 12 E. 48 St., Zone 17, 20 story APARTMENT, 140-142 W. 67 St., 151 Amsterdam Ave. $2,900,000.

▲ **N. Y., New York**—Louis Puro, 350 5 Ave., Zone 1, plans by Philip Birnbaum, 12 E. 48 St., Zone 17, 18 story APARTMENT, 517-523 E. 71 St. and 518-522 E. 72 St. Over $3,000,000.

▲ **N. Y., New York**—University Eighth Corp., c/o Boak & Raad, archts., 175 5 Ave., Zone 10, 25 story APARTMENT and STORES, 13-23 E. 8 St., 20-34 University Pl. $7,500,000. Greenhut & Taffel, 114 E. 32 St., Zone 16, consult. engrs.

▲ **N. C., Raleigh**—Martin Homes, 639 Chappell Dr., 460,000 sq. ft. SHOPPING CENTER, U.S. Hy. 1 and Beltline, $4,500,000; MOTOR HOTEL, over $500,000.

▲ **O., Oregon**—Edward F. Lowry & Assocs., 4514 Robinhall Court, Dayton, SHOPPING CENTER, 20 acre site, Navarre Ave. $3,000,000. Bids Fall 1961.

▲ **Pa., Pittsburgh**—St. Clair Memorial Hospital, 1000 Bower Hill Rd., HOSPITAL. $3,300,000.

▲ **Pa., Washington**—Washington Hospital, Washington, HOSPITAL BLDG. $3,000,000.

▲ **Tex., Dallas**—Carr P. Collins Trust, Fidelity Union Life Bldg., plans by Thomas E. Stanley, archt.-engr., 904 Fort Worth Ave., DEPARTMENT STORE. $5,000,000. Sanger-Harris Stores, lessee. CD 10/11/61.

▲ **Tex., Houston**—Lago Vista Properties, Inc., c/o Dr. C. Paul Harris, 3201 Westheimer, plans by Lundgren & Maurer, 1203 W. 6th St., Austin, Part Phase 1, 200 room MOTEL, swimming pool, $3,750,000; Phase 2, 8 story, 200 room MOTEL, swimming pool, $4,500,000; Part Phase 1, 64 unit APARTMENT, $600,000; Phase 3, 180,000 sq. ft. SHOPPNG CENTER, $2,000,000, Clear Lake area 20 mi. SE of here.

▲ **Wash., Spokane**—Halverson, Inc., Yardley, plans by Culler, Gale, Martell, Norrie & Davis, Realty Bldg., 11 story, rein.-con. Park Tower APARTMENT, Division St. at 7th Ave. $3,000,000. Constr in Summer.

▲ **Alta., Calgary**—Imperial Oil Ltd., 2026 9th Ave. S.W., plans by Rule, Wynn & Rule, 526 12th Ave. S.W., 8 story, steel, concrete OFFICE HEADQUARTERS 6th Ave. at 4th St. $3,500,000. CD 9/25/61.

▲ **Alta., Jasper Place**—Misericordia Hospital, c/o Diamond Clark & Assocs., archts., 11536 Jasper Ave. Edmonton, 550 bed HOSPITAL, between 165th and 107th Sts., $8,250,000; SCHOOL of NURSING, between 165th and 107th Sts., $1,200,000.

▲ **Que., Montreal**—Redbrooke Estates, 1410 Stanley St., plans by Martin & Prus, 4693 Sherbrooke St. W., 29 or 32 story APARTMENT, northwest corner Sherbrooke and Redpath Sts. $10,000,000.

▲ **Que., Montreal**—Shoppers World, 6700 Cote des Neiges Rd., plans by Mayers & Girvan, 5757 Decelles Ave., SHOPPING CENTER, enclosed mall, Cote des Neiges Rd. $3,000,000.

INDUSTRIAL BUILDINGS

▲ **Alaska, Kenai**—Standard Oil Co. of California, 225 Bush St., San Francisco, Calif., 20,000 b/d REFINERY, on Kenai Peninsula. $11,000,000.

▲ **Ill., Baldwin-Illinois Power Co.**, 500 S. 27th St., Decatur, 1,000,000 kw POWER PLANT, Kaskaskia River, Contr. about 1963.

▲ **Ill., Wood River-Illinois Power Co.**, 500 S. 27th St., Decatur, Ill., 325,000 kw WOOD RIVER GENERATING STATION ADDN. CD 4/26/51.

▲ **Iowa, Clinton**—Standard Brands Corp., 625 Madison Ave., New York, N. Y., 1 story, 50.000 sq. ft. GRAIN NEUTRAL SPIRITS PROCESSING PLANT, and ENZYMES and ALLIED SUBSTANCES PROCESS PLANT for Clinton Corp. Processing Division. $6,500,000.

▲ **Kan., Liberal**—National Helium Corp., (National Distillers & Chemical Corp., 99 Park Ave., New York, Zone 16, N. Y., and Panhandle Eastern Pipeline Co., 120 Broadway, New York, Zone 5, N. Y.), 1,000,000 cu. ft. per year HELIUM EXTRACTION PLANT, near here. $25,000,000. Air Products, Inc., Trexlertown, Allentown, Pa., engr. CD 10/19/61.

▲ **Ky., Calvert City**—General Aniline & Film Corp., CHEMICAL PLANT EXPANSION. $4,000,000.

▲ **N. J., Camden**—Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y., GYPSUM-PROCESSING PLANT, Front St. and Kaighn Ave., 25 acres. $7,000,000.

▲ **N. M. Carlsbad**—Kerr-McGee Oil Industries, Kerr-McGee Bldg., Oklahoma City, Okla., and National Farmers Union Service Corp., Farmers Union Bldg., Denver, Colo. 1,500 tons daily POTASH MILL, MINE SHAFTS, Over $2,500,000.

▲ **N. C., Winston-Salem**—R. J. Reynolds Tobacco Co., Reynolds Bldg., ELECTRIC POWER PLANT ADDN. $5,000,000, Stone & Webster Engineering Corp., 49 Federal St., Boston, Mass., consult. engrs.

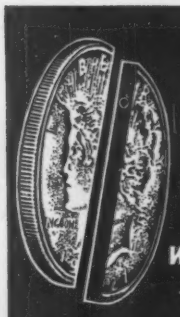
▲ **Tex., El Paso**—Weaver Co., 1800 East First St., plans by Nesmith & Lane, archts.-engrs., 5933 Gateway, West, MANUFACTURING PLANT, Industrial District. $5,000,000. Bids in December.

AMERICANS ABROAD

▲ **Vietnam, Saigon**—Govt. Vietnam, Saigon, RUNWAY, Bien-Hoa Airport, $5,000,000; RUNWAY, AIRPORT, Tourane Airport, $3,600,000. T. B. Bourne Assocs., Inc., Dupont Circle Bldg., Wash., D. C., U.S.A., consult. engr.

For additional reports see CONSTRUCTION DAILY NEWSLETTER

(Proposal Advertisements see pp. 96 & 99)



CUT WATER SUPPLY COSTS with REDA Submergible PUMPS

. . . and still obtain maximum water supply and maximum pressure for ALL your water needs. Here's Why:

1. QUALITY CRAFTSMANSHIP . . . Yet production line cost . . . A complete line of 2-pole and 4-pole models to meet operating heads and capacities required. Both electric, submergible motor and pump are REDA manufactured.

2. Oil lubricated motors require less power per H.P. PROVIDE MORE WATER PER DOLLAR than comparable units.

3. Low Installation and Operating Cost. No special piping needed, no drive shafts, rods, belts or gears or costly foundations are required. Operation is completely automatic with minimum controls required.

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
D-47E	6"	55	2000	200
G-70E	6"	72	5400	180
G-120A	6"	110	3500	105
G-160	6"	150	2750	82
I-200	8"	210	2000	54
FR-300	8"	325	1250	54
J-400	8"	480	780	60

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
GB-600	10"	600	600	60
KG-725	10"	800	490	69
N-500	10"	425	1100	30
N-750	11"	(c)600*	1000	30
		(a)700		
P-1000	12"	1200	1000	46
R-1500	14"	1800	700	65
T-2000	16"	2250	600	85

*(c) and (a) designate impeller cut within the same pump type.

Models Available from ⅓ to over 300 H.P. Call or Write for Industrial Bulletin R-432 and more complete information.

REDA PUMP COMPANY / BARTLESVILLE, OKLAHOMA

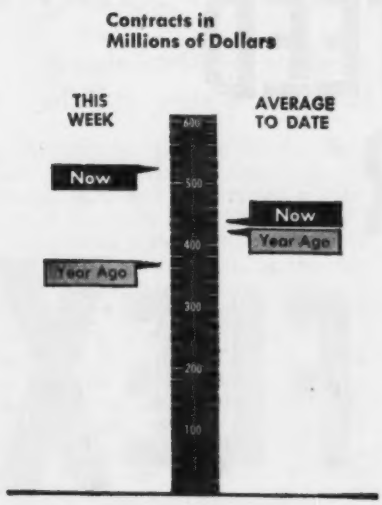
SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

Manufacturer of Submergible, Electric Motors and Pumps for over 40 years. Pumps for Oil, Brine, Water, Gasoline, Jet Fuel, Chemicals, LPG

PHONE FE 6-7900

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

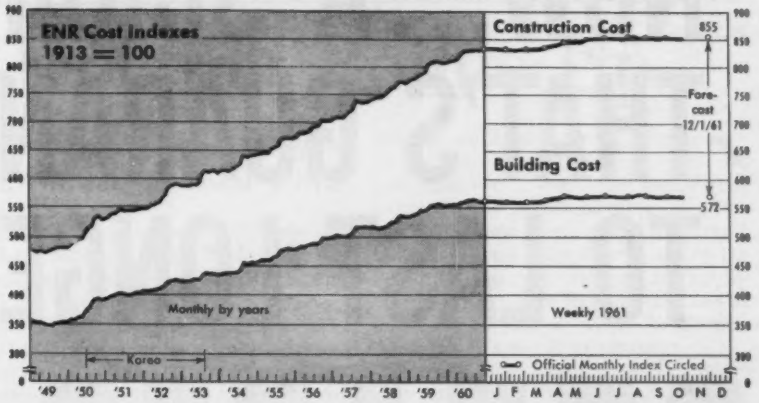
Contracts Awarded In 50 States By Type	This Week millions	Cum. 44 wks 1961	Chge '60-'61 %
All Heavy Construction	$527.0	$19,086.0	− 2
By Ownership			
PRIVATE	318.0	9,453.6	− 9
PUBLIC	209.0	9,632.4	+ 7
State & Municipal	165.2	7,558.2	+ 7
Federal	43.8	2,074.2	+ 5
By Type of Work			
PUBLIC			
Waterworks	7.1	340.4	−13
Sewerage	23.8	706.0	+41
Bridges*	13.1	564.4	−19
Highways	71.7	3,241.0	+12
Earthwork, Dams & Waterways	12.9	697.2	+ 5
Buildings:			
Excl. Housing	27.4	2,267.1	+10
Housing	23.1	718.6	+21
Unclassified	29.9	1,098.4	−10
PRIVATE			
Buildings:			
Mass Housing	158.7	4,392.3	−11
Commercial	84.2	2,242.2	+ 7
Industrial	71.3	2,432.2	+ 4
Unclassified	3.8	386.2	−60

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Oct. 26 millions	Cum. 43 wks 1961	Chge '60-'61 %
Corporate Securities	$175.4	$2,999.3	− 4
State & Municipal:			
All Except Housing	198.0	5,583.4	+ 3
Housing	11.6	113.0	−40
Federal Loans	4.9	202.3	+24
Federal Aid	72.1	3,535.7	+10
Total Nonfederal	$462.0	$12,433.7	+ 2
Federal Appropriations:			
Projects in U. S.	$196.5	$3,328.9	+ 5
Outside U. S.	1.8	91.7	−42
Total New Capital	$660.3	$15,854.3	+ 2



ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 26 1961	% Change from Sept. 28 1961	% Change from Oct. 27 1960
Construction Cost	853.78	−0.1	+3.0
Building Cost	569.99	−0.1	+1.6

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.000; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

STATE AND MUNICIPAL BOND SALES

	1961 Oct. (millions)	1961 10-Mos. (millions)	Percent Change from 1960 Oct.	Percent Change from 1960 10-Mos.
Total Bond Sales	$552.0	$5,696.3	+33	+ 1
BUILDINGS	363.2	2,756.0	+60	+ 3
Schools	294.6	2,165.8	+45	+15
Housing	14.1	113.0	....	−40
Other buildings	54.5	477.2	+139	−22
HEAVY CONSTRUCTION	188.8	2,940.3	−0.3	− 2
Waterworks	44.4	471.8	+48	+34
Sewerage	27.3	438.5	+35	+38
Bridges	0	40.9	0	−76
Highways	45.8	657.7	+40	+41
Earthwork, dams, waterways	12.4	310.2	− 7	−27
Electric and gas utilities	7.2	129.1	−15	−37
Airports	0.02	105.3	−100	+31
Parking facilities	0.3	17.7	−77	−17
Unclassified	51.4	769.1	−35	−16

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49%=100—BLS	Sept. 1961	Percent Change from last Month	Percent Change from last Year
All Types	178.5	0	+0.1
Cranes, Draglines, Shovels	173.7	0	+0.1
Shovel, ¾ cu. yd	178.8	0	+1.9
Shovel, 1–1½ cu. yd	191.0	0	+0.9
Shovel, 2–2½ cu. yd	169.1	0	−0.8
Crane, truck mounted	165.9	0	−1.4
Scrapers and Graders	165.4	0	−0.8
Scraper, 4 Wheel, 12–15 cu yd	153.3	0	−2.3
Grader, heavy duty	173.5	0	−0.4
Tractors (non-farm; incl. industrial	195.4	0	+0.9
Wheel-type, off-highway (January 1955=100)	127.6	0	−1.3
Crawler type, 100–154 dhp	200.7	0	+1.3
Machinery, Tractor Mounted	177.9	0	+1.0
Dozer, hydraulic control	201.4	0	−0.3
Loader, shovel type	166.7	0	+2.1
Specialized Machinery	159.6	0	+0.6
Ditcher	153.8	0	0
Roller, tandem	228.5	0	+0.9
Roller, 3 wheels	178.7	0	0
Portable Air Compressors	181.5	0	+8.4
Contractors Air Tools	190.5	0	+4.9
Mixers, Pavers, Spreaders	164.2	0	+1.5
Mixer, truck, 6 cu yd	131.1	0	−3.0
Mixer, paving, 34 cu ft	192.9	0	−2.0
Bituminous paver	170.9	0	+3.2

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Federal Construction Points Up

Administration analysis puts spending for all types of U.S. public works at $7.3 billion in fiscal 1962

Construction spending by the Kennedy Administration is headed higher—although the rate of increases will be slow at the start.

This—along with an estimated deficit of $6.9 billion—shows up in the Administration's just-completed review of the budget and spending for the fiscal year ending next June. The analysis takes into account all the funds voted by Congress and the Administration's latest plans for committing those funds.

Federal spending for public works—including grants from the Highway Trust Fund—will reach some $7.3 billion, compared with the estimated $7 billion spent in the fiscal year ended last June.

The upward tilt to construction spending shows in such things as housing and urban renewal, public works, saline water development, highways, grants to hospital construction, mass transit and the like.

President Kennedy estimates military construction spending at $1.2 billion for 1962, the drop partly attributable to the cancellation of the construction of an underground Titan II base. This $1.2 billion compares with 1961 spending of $1.6 billion.

Spending from the Highway Trust Fund will hit $3.1 billion, according to Mr. Kennedy's estimate for 1962. Mr. Eisenhower's '62 estimate was $2.9 billion.

The big surge of urban renewal spending only begins this year. Mr. Kennedy estimates it at $222 million, only $74 million higher than in fiscal year 1961. But the commitments "will ultimately lead to annual federal expenditures of over $600 million for urban renewal," he says.

The new estimate for all spending on development of land and water resources runs to $1.5 billion. This rise of $110 million over 1961, stems from planned construction and operation of flood control, irrigation, power, and related projects.

The 1962 budget estimates now include projected outlays for 71 starts by the Corps of Engineers, including 22 projects not in the Kennedy budget requests that were added by Congress; 12 starts by the Bureau of Reclamation, of which five were unbudgeted; and one steam-electric plant for the Tennessee Valley Authority. In addition, the spending includes $5 million for Corps of Engineers projects to restore navigation facilities damaged by hurricanes.

The Department of Health, Education and Welfare is stepping up its construction spending. Assistance to schools in federally impacted areas will rise to $301 million this year, from $279 million last year. Grants for hospital, waste treatment and health research facilities will rise to $241 million this year from $226 million in 1961.

One thing to watch for in the months ahead will be an attempt by Administration economists to get more acceptance for the so-called "income and product account budget" instead of the more familiar "administrative budget" when it comes to measuring the impact of federal programs on the economy.

This budget will be used to justify federal policies and programs. When it shows a surplus, at just the time the administrative budget—the one known to the public generally and the one politicians battle over—will be showing a deficit of $7 billion or more.

The income and product account budget, among other things, shows tax liabilities of corporations as they are incurred, and charges federal purchases as delivered, instead of when the government issues a check in payment.

Already, the Council of Economic Advisers takes every opportunity to point out that the income and product account budget will be balanced by the first of the year, and come into surplus by next spring. These economists therefore say that various measures should be taken now or next spring to offset the deflationary effect on the economy as the income and product account budget goes into surplus.

Many other Administration officials are talking about the necessity for holding down spending and balancing the budget, but Administration economists call attention to the fact that we shouldn't allow the recovery to level off next spring and summer, when levels of unemployment may still be high.

Business in Brief . . .

• **Business for Virginia**—Two groups plan construction of a 275-acre industrial and rental housing development at Woodbridge, Va., near Arlington. Seaporcel Metals, Inc., of New York City, and an investment group headed by J. A. Cantor, president of Cantor Co., Miami, are the developers.

• **Philadelphia bonds**—Voters in Philadelphia face bond proposals for capital improvements totaling $66 million. The issues will be on the November ballot.

• **Fire damage**—A $30.4 million damage suit filed by the federal government at Sacramento, Calif., charges three highway contractors with starting a 35,000-acre forest fire in August, 1960. The suit claims negligence in burning brush and debris. Contractors are J. W. Briggs, J. C. Conley and G. D. Dennis & Sons, Inc.

• **Disagreeable session**—The Ohio legislature, called into special session by Gov. DiSalle to enact a capital improvement program, rejected his $40 million proposal. During the regular session, it refused to pass a $45 million program.

• **Industrial development program**—The Port of Portland Commission (Ore.) will prepare 10 waterfront industrial sites at an estimated cost of $35 million during a 15 to 30-year program.

• **Engineers' earnings debated**—The Association of Professional Engineers of British Columbia says that the government's report showing architects and engineers had average income in 1959 of $14,982 is grossly misleading. The Association cites a report by the Canadian Council of Professional Engineers showing median income for Canadian engineers in 1959 was $8,200; in 1960, $8,544.

Tax-Change Drive Builds Anew

● Changes may be limited to revision of Bulletin F, and closing of a small group of so-called loopholes.

Important tax-change disputes and decisions face next year's session of Congress. Most still stem from studies and legislative requests initiated by President Kennedy, some from congressmen harboring pet peeves.

Any changes that may come will mean much to business, but only a few will apply directly to the construction industry. All, however, will bear indirectly on the construction industry, while a few may affect individuals within the industry. The latter type would include possible dividend withholding and revisions of regulations governing stock options, a prime target of Sen. Albert Gore (D., Tenn.).

Depreciation allowances, however, qualify as perhaps the hottest topic, and certainly a live one. But other possible legislative actions by Congress could cover tax credits on purchases of new equipment, quicker taxation of income earned by foreign-based subsidiaries of U. S. companies, partial withholding of interest and dividend income at the source, and tougher treatment of earnings of corporations located in so-called tax haven countries.

A Treasury revision of Bulletin F looks certain. This Internal Revenue Service handbook guides agents handling taxpayer requests for a shorter tax life on given pieces of equipment. Treasury officials want to give all companies in an industry any quicker write-offs that may have been granted to individual companies within an industry. In these cases, the companies succeeded in justifying a shorter tax life than specified in Bulletin F on equipment in question.

Construction and building contractors, however, may fail to obtain significant speedup of depreciation allowances. A large amount of construction equipment already has a short life under Bulletin F definition.

Although changes in Bulletin F rate as administrative prerogative, Treasury officials will confer first with Congress' Joint Committee on Internal Revenue Taxation.

Under current practice, a company must show Revenue people that their machinery becomes technologically obsolete before wearing out. The textile industry as a whole, succeeded on this score, and won sweeping changes in the textile section of Bulletin F.

The construction industry may find it difficult to prove its machinery becomes obsolete before it is physically worn out. Any changes in Bulletin F's construction category may therefore be limited.

And rules governing depreciation of buildings probably will remain the same.

In pushing for across-the-board boosts in depreciation allowances, the Administration hopes that it will then win support of business and Congress for the controversial 8% tax credit on equipment purchases. The Administration failed to obtain such a measure this year in the face of almost unanimous opposition from industry.

The proposed credit—a tax-saving gimmick worth an estimated $1.1 billion a year to business—never found popularity outside of the Treasury Department. Its future remains clouded, because the Administration still wants the tax credit tied to the closing of existing tax loopholes. Such changes would boost revenue by an estimated $1 billion a year. Many congressmen find the revenue boosters politically unpalatable in an election year, since many of them would bite into large numbers of individual taxpayers. One such proposal would repeal the credit against income taxes equal to 4% of dividend income above the first $50. The first $50 is not taxed.

In addition, some critics say the proposals run counter to sound economics and even conflict with Administration programs and avowed policies. The Administration proposal to tax profits of foreign subsidiaries as earned falls into the latter category, according to critics. They apparently won their point because the draft of a bill prepared by the House Ways and Means Committee excludes the as-earned tax proposal. It appears dead for the foreseeable future.

The bill in draft form does include, however, some changes involving income earned overseas. One would change the formula for computing the tax on the repatriated earnings of overseas subsidiaries. Under present regulations, credits for foreign taxes paid result in an effective rate of less than 52%, the corporate income tax rate. Under the proposed change, the formula would result in an effective rate of 52%, although the tax credits would still apply.

The committee draft also retains the provisions exempting from personal income tax earnings of up to $20,000 a year if a person works abroad for 17 out of 18 months. Construction executives opposed elimination of the exemption, arguing it serves as an incentive in recruiting executives and engineering personnel for overseas jobs. Dropping the exclusion would force an increase in salary scales to offset the tax bite, construction people said.

A key provision of importance to construction involves the tightening of the law governing taxation of income from the sale of depreciable property. Taxpayers who write off equipment, then sell it, pay taxes on the income received at the capital gains rate.

Under the new proposal, the income received would be taxed at ordinary income rates on the difference between the depreciated cost and the actual cost. The present law on tax treatment of income from the sale of real estate, however, remains untouched in the new draft. The Administration proposed—but the committee rejected—that ordinary income tax rates be applied to the difference between the depreciated cost and the actual cost. Existing law applies the capital gains rate to the difference. Investment builders and real estate interests argued that the Administration's proposal would seriously slow new construction of commercial and apartment building construction.

Election Campaign Spawns $4.7-Billion Housing Idea

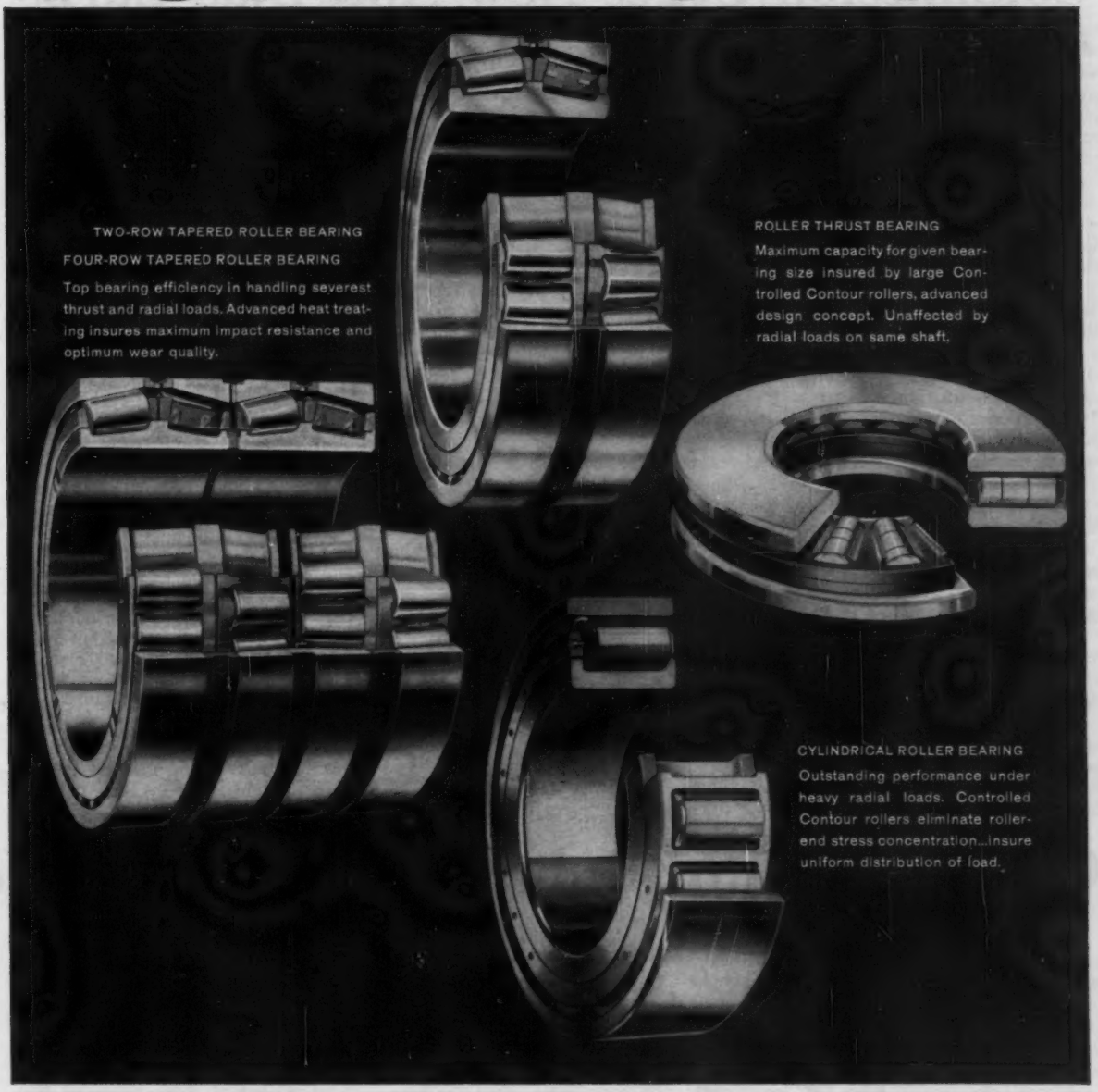
New York City recently got an unsolicited program for housing construction from New York State's Gov. Nelson A. Rockefeller.

He detailed a $4.7-billion, middle-income program for the city, one that would not displace existing buildings and their occupants. Instead, 30-story buildings with rentals of $29 a room or less would be provided by using air rights over publicly owned facilities such as tunnel-entrance plazas, piers, subway-car storage yards, and highways.

Governor Rockefeller said his plan would provide housing for one million persons, or 250,000 middle-income families.

Now deep in a hot election campaign, Democratic Mayor Robert F. Wagner responded to the Republican governor: "What is good in that proposal is not new, while most of what is new is not particularly good."

TORRINGTON



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Commission Urges New Anti-Bias Curbs

- **Civil Rights Commission finds that autonomy, closed shop, other union practices promote discrimination.**
- **It seeks tighter enforcement of present laws, a stronger Committee and new legislation.**

The United States Commission on Civil Rights has opened another Pandora's box for the construction industry.

It suggests that the National Labor Relations Board, Congress and the President step in with a heavier hand to force unions and employers to put an end to what it calls a "vicious circle of racial discrimination."

In a series of provocative observations and recommendations that are subtle and far-reaching in some respects, the Commission suggests that:

- The NLRB, with its power to fashion appropriate remedies, "could provide a vehicle for breaking down barriers" to the employment of Negroes by more stringent and effective enforcement of the ban on closed shops.
- The Board "might well amend its policy and disqualify discriminatory unions from participating in representation elections."
- President Kennedy should amend his Executive Order 10925, which established the President's Committee on Equal Employment Opportunity, to cover contractors on all federal grants-in-aid projects as well as contractors on federal construction projects.
- The President's Committee should be given statutory authority—and the power to enforce its policies of equal opportunity, including the opportunity to join those unions whose members are employed by contractors on federal and federal grants-in-aid projects.
- Congress should set up "a system of federally subsidized employment and training made available on a nondiscriminatory basis."
- The Landrum-Griffin law should be amended to make it illegal for a union to "refuse membership to, segregate, or expel any person because of race, color, religion, or national origin."

The Commission's 164-page report, entitled "Employment," was just released. It is part of the Commission's second statutory report to the President and Congress.

The report is a strong indictment of the construction industry. Here the Commission found some of the most blatant examples of discrimination—discrimination perpetuated by exclusionary and illegal closed-shop union practices that are implemented and condoned by contractors.

The Commission notes that the closed shop has been banned since 1947 and then goes on to state:

"Because union membership or referral by the union is a virtual necessity for obtaining employment on unionized projects (the bulk of commercial construction), the extent of Negro membership in construction craft unions determines the extent of Negro employment in this industry.

The Commission says the Negro has made little progress except in the trowel trades and as laborers. His employment in the plumbing, metalworking and electrical trades, it reports, is still "minimal."

Without mentioning the now-famous Mountain-Pacific hiring hall case by name, the Commission observes that if a union's policies are discriminatory and if "the contractor's own employment policies are controlled in some degree by the union," the contractor may in effect be held responsible for the union's policies. This is the theory, it said, behind the punitive powers the President's Committee can exercise over contractors who engage in union-dictated discriminatory employment practices on federal contracts.

In addition to the NLRB's failure to eliminate the closed shop, the Commis-

Owner-Operator Rulings Haven't Clarified

Two federal agencies—the Labor Department and the National Labor Relations Board—have recently confessed to the confusion that surrounds the employment status of "owner-operators." Although neither one has offered construction employers any helpful guidelines, the action taken in two instances does afford a broad outline of current views on the problem.

In once case, the Labor Department has temporarily backed away from its efforts to apply the Davis-Bacon prevailing wage law to owner-operators. In the other case, the NLRB has ruled rather shakily that owner-operators whose "work and the manner of its performance" do not differ from those of employee-drivers on the same job are not "independent contractors."

The Labor Department turnabout was announced by Solicitor of Labor Charles Donahue in a letter to the Corps of Engineers.

Mr. Donahue said that "substantial difficulties" have been encountered in determining whether owner-operators have in fact been paid the minimum rates. Payment arrangements based on unit price have complicated the compliance problem, and adequate information on rental arrangements has been hard to get, he explained.

"Because of these and other related considerations," Mr. Donahue advised, "we . . . have reached the conclusion that, as a matter of administrative policy, the provisions of the Davis-Bacon and related Acts will not be applied to bona fide owner-operators of trucks and other similar construction equipment who are independent contractors, until such time as it may appear to be practical to devise workable and easily enforceable procedures for obtaining compliance . . ."

In the meantime, he said, certified payrolls that include the names of bona fide owner-operators need not show hours worked or rates paid, but only the notation "Owner-Operator."

Mr. Donahue's letter stemmed from compliance problems encountered by the Corps of Engineers at Eufaula Dam on work along the Canadian River.

In the NLRB case, the question was whether a teamsters local union had committed a secondary boycott by threatening to strike a subcontractor unless he took two owner-operator truck drivers off a job.

A majority of a three-member panel called the question of whether the two drivers were "employees" or owner-operators a "close" one. However, it put them in the "employee" category

sion points to two glaring weaknesses in the Taft-Hartley and Landrum-Griffin laws.

It observes that the preferential hiring provisions won by the building trades in the Landrum-Griffin law are inconsistent with national policy because they can legalize discrimination.

The effect of the provisions, the Commission explains, is to allow unions and employers to perpetuate local discrimination practices in their labor contracts by using the hiring gimmick of employment experience in the industry or the area.

The Commission also notes that, because of local autonomy, the AFL-CIO and the international unions are not in a position to dictate membership requirements to local unions. This "institutional disability," it says, forestalls "the translating of enlightened parent resolutions into local action."

The membership problem in a number of skilled trades is academic, however, as long as apprentice training is closed to Negroes, the Commission observes. It places most of the blame on union "control." But it notes that the bulk of construction training is jointly administered and suggests that contractors are failing to discharge their joint and legal responsibilities.

The Commission does not feel that the antidiscrimination clause being pushed by the Bureau of Apprenticeship and Training, or the Powell apprenticeship bill, provides the answer because the withdrawal of registration is a penalty of "limited effect."

Foggy Issue

and held there could have been no boycott with respect to the subcontractor because he was not "doing business" with the drivers.

The majority's reasoning was that the drivers, who owned their own trucks and who were paid haulage rates for the ready-mix they carted, were required to operate in a come-and-go, tandem fashion, sandwiched in between four of the sub's employee-drivers. Neither one could "vary from this pattern nor could either, by the exercise of independent skill or judgment, increase his profits by additional hauling," the majority concluded.

Board member Boyd Leedom, disagreeing with his two colleagues (John Fanning and Gerald Brown) said the two drivers were clearly independent contractors under the common law "right of control" test.

Montreal Unions End Strike

The principle of association bargaining in the construction industry has successfully withstood the biggest strike that has ever occurred in Montreal.

As a result of a settlement agreement reached last week, the building trades unions have abandoned, at least temporarily, an effort to by-pass the Montreal Builders' Exchange and to bargain directly with contractors on an individual basis.

Under the system that remains in effect, contractors who belong to the Exchange bargain, not as separate companies, but collectively through the Exchange with each of the building trades unions representing 17 different trades. The system has reportedly worked well for over a quarter of a century. Much of the stability the industry has enjoyed in Montreal is attributed to this practice of multiple bargaining.

The strike began on September 1 when members of the sheet metal workers union left their jobs. They were then negotiating a new contract with the Exchange and demanded the right to bargain directly with individual contractors. The rest of the building trades joined them in a sympathy strike on October 10. The strike was settled after the personal intervention of the provincial minister of labor.

The new Exchange agreement accepted by the sheet metal workers provides for a 25-cent hourly wage increase, spread over a 14-month period, and for a contributory welfare plan that becomes effective in January, 1963. Employees and employers will each contribute half the plan's cost, which is not to exceed five cents an hour for either party.

The contract also provides that there will be no strikes, no picketing, no lockouts and no slowdowns during the life of the agreement.

As part of the settlement, the Builders' Exchange has informally agreed to preferential hiring.

Labor in Brief . . .

• **"No" on representation**—The NLRB has rejected a Montana Building Trades Council petition to represent those employees of Anaconda Aluminum Co. who are working on construction of a new building at the company's Columbia Falls plant. The Board said the workers are included in the plant production and maintenance unit now represented by the aluminum workers union.

• **Lockout**—An iron worker demand that union stewards be paid for those days iron workers cannot work because of weather has interrupted Cleveland construction work for three weeks. The union, while bargaining, struck one firm. Two contractor associations retaliated with a lockout of iron workers on the theory that "a strike against one is a strike against all."

• **Prevailing wages**—The determination of prevailing wages in New Hampshire is being challenged in a case now before the State Supreme Court. School and city authorities in Keene contend determinations illegally take into consideration labor contract rates that do not apply in the community.

• **Officers held responsible**—Two state court rulings that union officials can be held responsible for union violence on a picket line were left undisturbed by the U.S. Supreme Court last week. The court refused without comment to review contempt convictions of two Cleveland local union presidents for violating temporary restraining orders making them liable for the conduct of the members of their unions.

• **Negro admitted**—Local 1883 of the carpenters union has become the first of the Peoria, Ill., skilled building trades unions to accept a Negro as a member. The new member, after paying an initiation fee of $135, went to work last month at $4.02½ an hour.

• **Union rivalry**—An NLRB injunction proceeding against United Mine Workers District 50, stemming from an unfair labor practice charge filed by a subcontractor on a Williamson, W. Va., floodwall project, has been stayed under a settlement agreement. The subcontractor claimed the union interfered with its work by demanding that it hire District 50 workers instead of AFL-CIO members.

OFFICIAL PROPOSALS

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New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 16th day of November 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. FULLER, District Engineer, 353 Broadway, Albany 1, New York						
Albany Rte. 9W	FASH 61-24 FARC 61-157	Delmar By-Pass Part 1 (Elm Ave. to Route 9W) Albany-Bethlehem Center, S.H. 5499 Proj. U-1129(2)	4.18 (2.28 Acc.)	9" Cement Conc. Pavt., 2 @ 24' Var.=3.76 Mi.; Asphalt Conc.=2.53 Mi.; Misc. Work=0.17 Mi. H.G.S. Comp. I-Beam	$225,000 Plans $5	$3,897,000
Greene Rte. 23	FARC 61-149	Cairo-Windham, Part 3, S.H. 8053; Cairo-Windham, Part 2, S.H. 5462. Proj. F-1159(5)	4.55	Asphalt Conc.=4.51 Mi. Misc. Work=0.04 Mi.	$90,000 Plans $5	1,662,000
Rensselaer Rte. 7	RC 61-152	Troy-Brunswick, Part 2, S.H. 25	0.08	Rock Removal	$850 Plans $5	15,000
Washington Rte. 22	FARC 61-154	Whitehall Village: Canal & Broad Sts., S.H. 5531; Whitehall-Dresden Center, Part 1, S.H. 5578; South Bay Bridge, S.H. 9113; Whitehall-Dresden Center, Part 2, S.H. 5637A; Whitehall-Dresden Center, Part 3; Dresden Center-Dresden Station, S.H. 8132; Dresden Station-Putnam, S.H. 8225. Proj. F-371(6)	10.56	Asphalt Conc.=10.16 Mi. Misc. Work=0.13 Mi. Constructing Causeway=0.27 Mi.	$235,000 Plans $5	4,273,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery	U.S. 106	Lock 14-E, Erie Canal, Canajoharie	....	New Gates; Lowering Sills; Misc. Work	5% of Bid Plans $10	Estimate Confidential
Oneida Madison	M 61-15	Durhamville Aqueduct Over Oneida Creek City of Oneida	....	Rehabilitation of Aqueduct	$2,600 Plans $5	50,000
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga Rte. 90	FARC 61-155	Locke-Homer Part 1, S.H. 9089 Proj. F-675(3)	8.73	Asphalt Conc. Type 1A	$55,000 Plans $5	1,187,000
Onondaga (Int. Trg. Rte. 81 & Rte. 11)	FISH 61-21	Interstate Route 505 (Nedrow to Syracuse City Line) Syracuse-Lafayette, S.H. 5365 Proj. I-81-2(65)	3.28 (1.61 Acc.)	9" Cement Conc. Pavt. 2 @ 24' Var.=3.03 Mi.; Asphalt Conc.=1.62 Mi.; Misc. Work=0.24 Mi.; 2 Hgs Comp. I Beam & Plate Gird.; 1 Hgs Comp. I Beam	$140,000 Plans $10	2,572,000
DISTRICT No. 6, WM. J. DENNIS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany Rte. 408	FARC 61-153	Friendship-Belmont, S.H. 5341 Proj. F-294(4)	4.73	Asphalt Concrete	$31,000 Plans $5	564,000
Allegany Rte. 408	FARC 61-156	Cuba-Friendship, S.H. 5174 Cuba-Friendship Part 2, S.H. 5312 Proj. F-326(4); F-294(2)	2.79	8" Cement Conc. Pavt. 24' Var.=2.70 Mi. Misc. Work=0.09 Mi. Twin Reinf. Conc. Box Bridge	$55,000 Plans $5	1,007,000
Schuyler Rtes. 14 & 414	TC 61-6	Watkins Village-Franklin St., S.H. 5335 Watkins-Bennettsburg, S.H. 5295	....	Eight Traffic Signals	$6,500 Plans $5	119,000
DISTRICT No. 8, M. N. SINACORI, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Putnam	FASS 61-14	Milltown Road, CR No. 504 (Bridge and Approaches) Proj. S-611(1)	0.10	Asphalt Concrete Comp. I-Beam Bridge	$6,000 Plans $5	106,000
Rockland	FASS 61-5	New City-Congers, County Rd. (Main St. to Brewery Rd.). Proj. S-311(3)	0.72	Asphalt Concrete	$19,000 Plans $5	332,000
Westchester	SBP 61-1	Sprain Brook Parkway Tuckahoe Rd. to Jackson Ave.	2.60 (3.45 Acc.)	8" Cement Conc. Pavt. 2 @ 36' Var.=3.19 Mi.; Asphalt Conc.=2.80 Mi.; Misc. Work=0.06 Mi.; Reinf. Conc. Closed Box Culvert. Hgs WF Comp. Beam; Conc. Retaining Wall	$230,000 Plans $5	4,103,000
Westchester	TSP 61-1	Taconic State Parkway Realignment Through Mohansic Park (Baldwin Road to Crompond Road)	2.58 (2.49 Acc.)	8" Cem. Conc. Pavt.=3.95 Mi.; Asphalt Concrete=0.85 Mi.; Misc. Work=0.27 Mi.; 2 Hgs Reinf. Conc. Rigid Frame	$200,000 Plans $5	3,573,000
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 87)	FIMDE 61-1	Int. Route Conn. 512 Major Deegan Expwy.—Contract 20 (Park Ave. to New York City Line) Proj. I-87-1(7)	7.48	Center Mall Barrier and Misc. Work	$18,000 Plans $5	322,000
Nassau	FANE 61-2	Nassau Expwy. Cont. 3 (Burnside Ave. to Central Avenue). Proj. U-1098(7)	0.88	Demolition of Buildings	$1,800 Plans $5	33,000
Nassau	WSP 61-1	Wantagh State Pkwy. Ext. (Northern State Pkwy.-Jericho Turnpike)	....	Demolition of Buildings	$225 Plans $5	4,000
Suffolk	FALIE 61-5	Long Island Expwy., Cont. 13 Islip Ave. (Caleb's Path) to Veterans Memorial Highway Proj. F-862(36)	2.85 (4.77 Acc.)	9" Cem. Conc. Pavt.=3.36 Mi.; Asphalt Concrete=4.07 Mi.; 2 Hgs. Twin Comp. WF Beam Bridges; 2 Hgs Comp. WF Beam Bridges; Misc. Work=0.19 Mi.	$260,000 Plans $10	4,523,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: November 10, 1961

City of Norwalk, Connecticut Improvements to Betts Pond Drain Advertisement for Bids

Sealed proposals for the Improvements to Betts Pond Drain will be received by City Clerk at City Hall, South Norwalk, Connecticut, until 1:30 P.M. Eastern Standard Time, November 10, 1961. Bids will be opened and read at the office of the Flood and Erosion Control Board, Veteran Memorial Park, Norwalk, Connecticut, at 2:00 P.M., Eastern Standard Time on November 10, 1961.

Information for Bidders, Proposal Form, Price Schedule, General Conditions, Special Conditions, Technical Specifications, Plans and other Contract Documents may be examined at Office of City Clerk, City Hall, South Norwalk, Connecticut, and copies thereof may be obtained upon deposit of $20.00 for each set on or after October 25, 1961. The full deposit will be refunded to each bidder, and one-half the deposit to each non-bidder upon the return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by cash or a certified check or a bid bond in an amount not less than five per cent (5%) of the amount of the bid. Checks shall be made payable to Treasurer of City of Norwalk, Connecticut.

The City of Norwalk reserves the right to waive any informalities in or to reject any or all bids.

Consulting Engineers are: Seelye Stevenson Value & Knecht, 101 Park Avenue, New York 17, New York.

Principal items of work include:

600 L. F. of 96-inch Dia. Reinforced Concrete Pipe.
1200 L. F. of 30-inch Dia. Reinforced Concrete Pipe.
Junction Chamber.
Headwall.
Sanitary Sewer Siphon.
Retaining Walls.

CITY OF NORWALK, CONNECTICUT
By: John Shostak, Mayor, City of Norwalk.
LeRoy D. Downs, Chairman, Flood & Erosion Control Board.

October 18, 1961

Bids: December 5, 1961

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2.30 P.M., Eastern Standard Time, on Tuesday, December 5, 1961, and opened at that time for:

BID NUMBER 2873—WORK NUMBER S-2956-R—MILL CREEK SEWER—Reconstruction of Mill Creek Sewer in its Present Location, Brown Street from a Point 27.39 feet West of 50th Street to 53rd and Poplar Streets.

PRINCIPAL ITEMS OF WORK

Excavation	—58,000 cubic yards
16'-0" X 18'-0" Reinforced Concrete Sewer—Arch Top	— 1,900 lin. ft.
13'-0" X 13'-0" Rectangular Reinforced Concrete Sewer	— 615 lin. ft.
10'-0" X 10'-0" Rectangular Reinforced Concrete Sewer	— 50 lin. ft.
Reinforced Concrete Junction Chamber	— 44 lin. ft. long
Branch Sewer Connections	— 300 lin. ft.
Underpinning	— 350 cubic yards
Water Main Relay	— 1,000 lin. ft.
Concrete Paving Base	— 550 cubic yards
Asphalt Paving	— 2,500 square yards

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, Room 1113, City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

OTTO R. WINTER,
Procurement Commissioner

Bids: November 16, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., Eastern Standard Time, on the 16th day of November, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, N. W. KRAFF, District Engineer, State Office Bldg., 65 Court St., Buffalo 2, New York						
Erie	FASS 61-10 FISS 61-11	Maple Rd. Extension (CR 192) & the Separation of Grades of Maple Road Extension (CR 192) with Powerline Expressway & Lehigh Valley R.R. Proj. S-250(3); I-290-1(44); I-291-1(6)	1.74	Asph. Conc. 1.74 Mi.; HGS Comp. I Beam, 4 Sps, 251' RRGS Comp. I Beam 3 Sps. 178' 2 Reinf. Conc. Twin Box Culverts	$95,000 Plans $5	$1,725,000
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Queens (Int. Trg. Rte. 495)	FAGCP 61-5 FIHHE 61-2	Grand Central Pkwy., Section 2, Contract 1 (Roosevelt Ave. to 77th Avenue) Int. Rte. Conn. 514 (Grand Central Pkwy.-Horace Harding Expwy. Interchange) Proj. U-UG-899(5); I-495-1(48)	3.72 (5.42 Acc.)	8" & 9" Cement Conc. Pavement, 2 @48'= 3.14 Mi. 8" & 9" Cement Conc. Pavt. Var.= 4.75 Mi. Asph. Conc.= 0.67 Mi. Misc. Work = 0.58 Mi. Riveted Steel Rig. Fr. Structure Welded thru Pl. Gird. Struct.; 2 Ped. Overpass Comp. WF Beam 2 Ped. Overpass WF Beam 1 Ped. Overpass Welded Plate Girder; 3 Comp. WF Cantilever Suspension 1 WF Beam Plus Alterations; Widen Exist. WF Beam Br.	$600,000 Plans $10	11,010,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: November 16, 1961

New York State Road Work

NOTICE TO CONTRACTORS: THE NEW YORK STATE BRIDGE AUTHORITY, BRIDGE PLAZA, POUGHKEEPSIE, N. Y. Pursuant to the provisions of the Highway Law, and Article 3, Title 2 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 16th day of November 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of said Authority, for the following project: M. N. Sinacori, Dist. Engr., Pleasant Valley, Road, Poughkeepsie, N. Y. ORANGE COUNTY.

NAME OF PROJECT & MILES	DEPOSIT FOR PLANS	BID DEPOSIT	ENGINEER'S EST.
NBB. 61-3 Newburgh Beacon Bridge over Hudson River, Cont. 4 Interstate Rte. 503 Newburgh Approach Roadway 0.50(0.10 Acc.) Miles	$5.	$45,000.	$842,000.00

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, New York, and at the office of the District Engineer, noted above, and at the office of the State Department of Public Works, 270 Broadway, New York City, and may also be seen at the New York State Bridge Authority Office at Mid Hudson Bridge Plaza, Poughkeepsie, N. Y.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned to the Bureau of Contracts in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications.

Proposal must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the NEW YORK STATE BRIDGE AUTHORITY for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, and Public Authorities Law, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS
FOR
NEW YORK STATE BRIDGE AUTHORITY
DR. JOHN L. EDWARDS
CHAIRMAN

INDUS BASIN PROJECT

WATER AND POWER DEVELOPMENT AUTHORITY

ADVANCE NOTICE

OF

INTENT TO INVITE TENDERS

FOR THE

CONSTRUCTION OF CANALS AND APPURTENANT WORKS

The above Authority is undertaking the construction of a number of large canals in West Pakistan. Their construction is being financed through the Indus Basin Development Fund, the operation of which will be administered by the International Bank for Reconstruction and Development (World Bank). The canals which form a part of the works embodied in the Indus Basin Settlement Plan will have a total length of about 390 miles and involve approximately 345 million cubic yards of excavation, as well as the construction of several hundred bridges and other canal structures.

The work will be divided into eight or more individual projects. Prospective contractors invited to tender on the first three canals have either already been prequalified or are being prequalified by action presently under way.

The fourth Link Canal to be undertaken will be the Qadirabad-Balloki Link Canal. This canal will extend from Qadirabad on the Chenab River to Balloki on the Ravi River and have a total length of approximately 78 miles in addition to a feeder canal of about 20 miles. The main canal will have a capacity of 18,600 cubic feet per second for the first 17 miles and 14,500 cubic feet per second thereafter. The feeder canal will have a capacity of 4,100 cubic feet per second. The canals together will involve approximately 93 million cubic yards of excavation, nearly half of which will be wet, and the construction of some 100 structures such as regulators, bridges, aqueducts and siphons.

The next canal to be constructed in the same area will be the Rasul-Qadirabad Link Canal which will extend from Rasul on the Jhelum River to Qadirabad on the Chenab River. This Link will have a capacity of 19,000 cubic feet per second throughout and a length of about 28 miles. Its construction will involve approximately 40 million cubic yards of excavation, over half of which will be wet, and the construction of some 35 structures such as regulators, bridges, aqueducts and siphons.

The Authority plans to call for tenders for the construction of the Qadirabad-Balloki Link in the Spring of 1962 and for the construction of Rasul-Qadirabad Link in the Autumn of 1962. Only contractors who have been prequalified by the Authority will be invited to submit tenders. For this purpose, the Contractors who wish their names to be included on a list to receive the document for prequalification are requested to submit the following information on or before 15 December 1961 to the Authority's Consultants, Tipton and Kalmbach, Inc., at **Post Office Box 589, Lahore, West Pakistan,** with a copy to their office at **831 - 14th Street, Denver 2, Colorado, U.S.A.:**

1. Name of Company or Firm with full address
2. Name and title of person to whom future correspondence should be directed.

The interested contractors will then be furnished with a document describing the work and setting forth the information required from them by the Authority in order to evaluate their qualifications for undertaking the proposed canal construction.

Project Director (Links)

WEST PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY

Bids: November 16, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 16th day of November 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick St., Binghamton, New York						
Broome	FAC 61-21	Binghamton Arterial Route Collier St. Bridge to Court St. Court St. to Brandywine Ave. at Frederick St. Tompkins St. Bridge and Approaches Proj. U-1019(7), U-496(17), US-725(5)	1.89	Demolition of Buildings	$20,000 Plans $5	$372,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: November 21, 1961

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract EP-110.016—Elizabeth-Port Authority Piers—Berth 54 and Upland Area and Berth 52—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, November 21, 1961.

Contract PN-110.011—Port Newark—Buildings 199 and 200—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, November 21, 1961.

Contract BP-230.009—Brooklyn-Port Authority Piers—Piers 9A and 9B—Demolition of Pier Sheds on Existing Piers 29, 30 and 32—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, November 21, 1961.

Contract NA-140.021—Newark Airport—Fence Lighting—No Deposit Required—Bids will be received until 2:30 P.M. on Tuesday, November 21, 1961.

Contract NYA-140.050—New York International Airport—Building No. 141—Medical Clinic—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, November 21, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 2, 1961.

Bids: November 15, 1961

Port of Oswego Authority

Sealed proposals will be received by the Port of Oswego Authority in the Common Council Chambers, City Hall, Oswego, New York, until 2:00 p.m., Eastern Standard Time on November 15, 1961 and immediately thereafter will be opened publicly and read aloud.

The work to be done under this contract shall be completed in 120 calendar days after the date specified in the notice to proceed, and consists of a water supply line and related work.

Bid guaranty in an amount not less than five per centum (5%) of the amount of the base bid, and a performance bond in the sum of 100 per cent of the contract price will be required.

Contract Plans, Specifications and other Contract Documents may be examined at the office of Nussbaumer, Clarke & Velzy, 327 Franklin Street, Buffalo 2, New York, and 500 Fifth Avenue, New York 36, New York, and may be examined and copies thereof may be obtained from the Port of Oswego Authority, West First Street, Oswego, New York.

A deposit of $25.00 is required for a complete set of Contract Documents and Plans, which will be refunded upon return of the Plans and Specifications in good condition within ten (10) days after the opening of bids.

PORT OF OSWEGO AUTHORITY
by Clark Morrison III
Chairman

DATED: November 1, 1961

READ THE OFFICIAL PROPOSAL COLUMN OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

District of Columbia—Building Construction—Dept. of Bldgs. and Grounds, D. C., Oct. 17, 1961. CONSTRUCTION OF BANCROFT ELEMENTARY SCHOOL ADDITION, located at 18th and Newton Sts., N.W., Wash., D. C. (Invitation No. C-6268-B). (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $25.00 per set, payable to D. C. Treasurer, (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EST, Nov. 16, 1961, in Room 424, 499 Penn. Ave., N.W.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5689) will be received at Red Bluff, California, until 2 p.m., Pacific Standard Time, December 5, 1961, for furnishing labor and materials for Gas Point Road-Elverta, Elverta-Hedge, and Hedge-Tracy, 230-Kilovolt Transmission Line, Trinity River Division, California, Central Valley Project. Location in Shasta, Tehama, Glenn, Colusa, Sutter, Sacramento, San Joaquin, Contra Costa, and Alemeda Counties, California. Principal items are 10,590 cu. yds., Concrete; 18,277,000 pounds, furnishing and eercting tower bodies and leg extensions; 165.7 miles of line, furnishing and stringing 1,272,000 circular-mil 45/7 ACSR; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California; P. O. Box 909, Red Bluff, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5687) will be received at Red Bluff, California, until 2 p.m., Pacific Standard Time, November 28, 1961, for furnishing labor and materials for Red Bluff Diversion Dam, Sacramento Canals Unit, Central Valley Project, California. Location near Red Bluff, California, in Tehama County. Principal items are Excavation 330,000 cu. yds.; Earthfill, 218,000 cu. yds.; concrete 41,900 cu. yds.; and other work. Completion time 1,100 days. For particulars, address Bureau of Reclamation, P. O. Box 909, Red Bluff, California; P. O. Box 2511, Sacramento 11, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5690) will be received at Ephrata, Washington, until 10 a.m., Pacific Standard Time, November 16, 1961, for furnishing labor and materials for Potholes Canal Enlargement, Station 23+00 to Station 166+73 and Station 471+00 to Station 510+00, Columbia Basin Project, Washington. Location approximately 5 to 11 miles north of Othello, Washington. Principal items are 191,000 cu. yds. of excavation; furnishing and installing two 16-foot by 12-foot top seal, radial gates and hoists; and other work. Completion time 105 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; 735 East Main, Othello, Washington; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5694) will be received at Ephrata, Washington, until 10 a.m., Pacific Standard Time, December 12, 1961, for furnishing labor and materials for White Bluffs Pumping Plant No. 2 Additions and WB10 Discharge Line, Columbia Basin Project, Washington. Location south of Othello, Washington. Principal items are 5,180 cu. yds. excavation; 830 cu. yds. concrete; Lump sum, constructing pumping plant superstructure; Lump sum, installing 4 main motor driven horizontal centrifugal-type pumping units; and other work. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; 735 East Main, Othello, Washington; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: November 28, 1961

Richmond Tunnel
Contract 500

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York 5, New York, until 11:00 A.M., Eastern Standard Time on Tuesday, November 28, 1961, for Contract 500, for the construction of the Richmond tunnel, together with its shafts and appurtenant work. The tunnel, approximately 25,000 feet long, will cross Upper New York Bay and will extend from a shaft in Brooklyn, New York, approximately 925 feet deep, to a shaft in Richmond, New York, approximately 965 feet deep.

Pamphlets of the contract can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $10.00 for each pamphlet. There will be a charge of $1.25 to cover mailing costs for each set of contract pamphlets requested. Blueprints of the contract drawings will be furnished at a charge of $3.10. For further particulars, apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; MARTIN T. GERAGHTY, Chief Clerk.

OFFICIAL PROPOSALS

Bids: January 2, 1962

Department of Public Works, N.S.W.
Contract No. 145-60/61

COAL LOADING PLANT AT
PORT KEMBLA INNER HARBOUR,
NEW SOUTH WALES, AUSTRALIA

TENDERS addressed to the President of the Tender Board, Department of Public Works, Sydney, N.S.W. will be received up to 2 p.m. on Tuesday, 2nd January, 1962 for the provision of a complete coal handling plant at Port Kembla, N.S.W., Australia. The plant is to have a capacity of 2,000 tons per hour, taking coal from rail trucks and loading to ships, with provision for storage and reclaim.

Specifications which include small scale reproductions of all plans may be examined at:

The Department of Public Works, Sydney, N.S.W.
Office of the Agent General for N.S.W., London, England.
Office of the Australian Trade Commissioner, Chicago, U.S.A.
Office of the Commissioner for New South Wales, 680 Fifth Avenue, New York 19, U.S.A.

Specifications may be purchased from any of the above offices for £A5 or U. S. $10 as the case may be, or will be sent by air freight to prospective tenderers by the Department on receipt of £5.

Contact prints of the plans may be obtained from the Department in Sydney at 5/- per plan.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *POSITIONS VACANT*

Graduate Engineer with at least 1 year experience in electronic computer programming and/or application for Computer Section of large consulting engineering firm presently using Bendix G-15 Computer. Permanent employment with liberal benefit program. Reply with resume to Stanley Engineering Company, Muscatine, Iowa.

Process Piping Engineer for full or part time work. Telephone—CO 2-5005 Paramus, New Jersey.

Estimator — Experienced for general contractor specializing in commercial, light-heavy industrial construction. Please send resume, photo and vital statistics—Location Mid-South—salary and percentage. All replies confidential. P-7656, Engineering News-Record.

Pipe fitter foreman. Experienced in Steam and Air Conditioning Piping. Metropolitan N. Y. area. P-7642, Engineering News-Record.

Field Engineer — Permanent position with established Midwest consulting firm for man thoroughly qualified and experienced in all branches of building construction. Moving expenses paid. Electrical or process engineer preferred. Send complete resume to P-7633, Engineering News-Record.

Guard Rail Superintendent. Must be familiar with all phases of guard rail construction and be able to procure and train capable foremen and operators. Send complete resume including salary requirements to P-7614, Engineering News-Record.

Water Works Engineer—Graduate with degree in Sanitary Engineering, or Chemistry, for water works management company; 5-10 years experience in investigation, design and supervision of purification facilities. Location: Philadelphia, Pa.; some travel. P-7700, Engineering News-Record.

Highway Engineers and Structural Designers. Experienced. Send resume and salary requirements. Frederic A. Nassaux & Assoc., 312 Trust Bldg., Chambersburg, Penns.

Civil Engineer, specialist in hot-mix asphalt paving practice—mix design, control at plant and field. Please give full details. Salary open. Permanent. P-7660, Engineering News-Record.

Mechanical Engineer (Civil Service Classification Mechanical Engineer II) Monthly Salary Range $594 to $725. Job Requirements: Makes studies, plans, estimates, tests and writes specifications for a wide variety of mechanical engineering work, such as diesel, steam and internal combustion power units and pumps with their respective auxiliaries and other related equipment used in both water and sewage treatment plants. Age, Education and Experience Requirements: Not over 55 years of age; must have B.S. degree in Mechanical Engineering plus five (5) years experience in the design, installation, operation, and maintenance of large scale mechanical engineering projects; or the equivalent combination of related education and experience. Please send a complete summary of your education and experience, including a transcript of your college credits and a photostatic copy of your military service discharge record for veteran's preference points to Henry W. Korner, Executive Secretary, City of Miami Civil Service Board, 3318 Pan American Drive, Miami 33, Florida. The closing date for receiving applications for the position is Dec. 15, 1961 and all qualified applicants will be given a written examination either in or near their present place of residence shortly after that date.

Electric Systems Engineer—Midwestern consulting engineering firm has challenging opportunity in electric systems planning. Work includes network analyzer, sectionalizing and economic feasibility studies. Permanent employment offered to man with 3 to 5 years experience. Submit resume and salary requirements to Stanley Engineering Company, Muscatine, Iowa.

Draftsmen, Structural-Experienced checkers and detailers of structural steel shop dwgs. Relocation expenses. Fink and Zwecker Co., 1100 Crescent Ave., N.E., Atlanta 9, Ga.

Civils—Water Resources Planning, domestic and foreign opportunities with expanding consulting firm for irrigation and hydroelectric engineers and hydrologist, minimum 5 years experience. Send resume and salary desired. P-7732, Engineering News-Record.

General Superintendent for established General Contractor in highway and heavy construction. Doing a volume of approximately $10,000,000.00 per year. Ohio and Kentucky area. Excellent opportunity for man with previous experience as General Superintendent or as Superintendent with responsible charge of highway and heavy construction projects. Must be fully qualified including formal training and experience in supervision, planning and control of highway and heavy construction jobs. P-7743, Engineering News-Record.

(Continued on following page)

CHIEF CONSTRUCTION ESTIMATOR

For a vigorous expanding construction company in the chemical and allied fields. In addition to the general qualifications of a full acquaintanceship with chemical plant construction and fundamental sound knowledge of current costs and modern construction methods, the following specific requirements must be met:

A DEGREE IN CIVIL, MECHANICAL OR CHEMICAL ENGINEERING.

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Send reply with full details of training, experience and salaries earned and expected to:

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Send complete resume, references, and salary requirements to:

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Allied Chemical's building products unit—Barrett Division—has an opportunity for an engineering graduate, offering considerable scope and challenge.

The man we seek will be concerned with quality of paving materials—specifically, paving mixes including selection of desirable aggregates, the characteristics of road asphalts and tars, as well as state highway specifications.

Headquarters will be in New York but frequent trips to mix plants and quarries will be required.

Please send resume to Personnel Manager

Barrett Division
ALLIED CHEMICAL CORP.
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For Bridge and Highway Projects

Send resume, references and salary requirements. Draftsmen include samples of recent work.

BROOKHART & TYO
3501 N. Front St. Harrisburg, Pa.

• POSITIONS VACANT

(Continued from preceding page)

Highway Engineers for work in Saudi Arabia. Should be able to locate, survey, design and supervise construction of bituminous roads in rugged terrain. H. W. Lochner, Inc., 20 N. Wacker Drive, Chic. 6, Ill.

Architect for small mid west A-E office. Start on salary plus percentage—lead to share in firm. P-7738, Engineering News-Record.

Wanted—Civil Engineer capable of applying engineering and administrative knowledge to the development, construction and maintenance of public works projects. Must have a degree in Civil Engineering and have experience in design and construction of streets, sewers, water lines, and other municipal public works activities. Salary $7119 to start. Send resume of education and experience to Personnel Director, City Building, Middletown, Ohio.

Civil, Structural, Sanitary Design Engineers wanted by Illinois consulting firm. Salaries from $7000, depending upon ability. Permanent positions with paid vacation, sick leave, and profit-sharing plan. Unlimited opportunities for aggressive personnel. P-7751, Engineering News-Record.

Senior Contracts Estimator—A large steel plate fabricator in the Chicago area requires an engineer to be responsible for the development of standards and procedures which permit the company to bid as a general contractor where our products are a dominant portion of the job. He will be responsible for developing costs of foundations, earth work, painting, auxiliary electrical, etc. In addition, this position includes participation in bids prepared as joint ventures. This position will carry supervisory responsibilities by projects. A candidate should have a technical degree from a fully accredited university—preferably Civil Engineering with a major in structures, soil mechanics or concrete. He should have at least 5 years of estimating experience on general construction projects. In the absence of full academic compliance, specific experience may be substituted. This position carries a nine to twelve thousand dollar starting salary. Please send complete resume to Graver Tank & Mfg. Co., 35 East Wacker Drive, Chicago 1, Illinois, c/o Industrial Relations Department.

Concrete Products Plant Manager — Plant Manager capable in handling Lab and Production of cellular air entrained products. Position located in Washington, D. C. area. P-7744, Engineering News-Record.

CHIEF ENGINEER

Chief Engineer for foreign office. Applicant must have successful record in directing the planning, design and engineering supervision of construction of large multi-purpose dams and irrigation works. Executive capability required to direct large staff and conduct effective cooperation of several technical agencies. Submit complete resume and references to Personnel Manager.

HARZA ENGINEERING COMPANY
400 West Madison Street Chicago 6, Illinois

• POSITIONS VACANT

Senior City Engineer—City of Elmira, New York—Degree in Civil Eng. with min. of four (4) years experience required. Must have or be eligible for a New York State Professional Engineer's License. Salary range $6708. to $8268. per annum. Send resume to William A. Branagan, City Manager, City Hall, Elmira, New York.

Graduate Civil Engineer to learn Prestressed Concrete Fabrication. Recent graduate will be considered. Moving expenses paid to relocate in central Wisconsin. Opportunity involves layout, design of shop drawings, some jobsite work, estimating and quantity take off and field sketches. Good possibility to grow with company. Reply to P-7723, Engineering News-Record, with resume of education and experience.

City Engineer—In charge of Municipal Engineering Division, Dept. of Pub. Wks. C.E. Degree and experience required. Salary: $7020. to: $8112., depending on qualifications. Apply Personnel Office, City of Woonsocket, Rhode Island.

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• POSITIONS WANTED

Construction Supt. Heavy Construction. PW-4482, Engineering News-Record.

Layout Eng. or party chief-clerk of works, diversified expr., will travel, location immaterial—single. PO Box 949, Hollywood, Fla.

BSCE, age 30, 5 yrs exp. as field construction supervisor for public utility. Exp. in constr. of power houses, commercial bldgs. Inspection, scheduling, coordinating, expediting, estimating, design. Prefers location eastern states. PW-7689, Engineering News-Record.

Structural Engineer—M.S., Prestressed Concrete manufacturer. Experienced in production, design, estimating, general supervision. Construction background. PW-7716, Engineering News-Record.

General Manager—Reg. PE, for med. or small contracting or engineering firm, 35 years diversified domestic and foreign exp. Available for an interesting connection. PW-7703, Engineering News-Record.

B.S.C.E. Age 24, single, military obligation complete. Desires field work in construction or petroleum industry in Latin America. 2 years field experience in construction. PW-7693, Engineering News-Record.

Structural Designer: Experienced in heavy steel and concrete structures as railroad, petroleum refineries, copper mine, and railroad bridges. Some highway bridge work. Graduate engr. Prefer So. Cal. or Gulf States. Consider other. PW-7692, Engineering News-Record.

Chief Estimator, graduate civil engineer, 38. Excellent field experience from field engineer to project manager. PW-7715, Engineering News-Record.

Senior Registered Civil Structural Engineer. Eleven years broad experience in plant engineering, preventive maintenance programs, industrial and communication structure design. Resume on request. PW-7674, Engineering News-Record.

Executive Hydraulic Dredge Civil Engineer desires connection with dredge firm or dredge owner. Full time, project or consultation basis. Over 25 years experience dredge management, field investigation, cost estimates. No family, location immaterial. PW-7657, Engineering News-Record.

(Continued on opposite page)

• POSITIONS WANTED
(Continued from opposite page)

Construction Superintendent — 25 years experience, buildings, dams, airports, docks, steel mills, fuel storage tanks and pipe lines, including repair work, structural steel erection rigging, pile driving, forms, concrete. PW-7611, Engineering News-Record.

Engineer with proven construction management ability. Major experience in supervision lump sum government contracts to $10 million size. Missile base construction experience. Graduate PE. Age 36. PW-7610, Engineering News-Record.

Chf. Estimator—15 yrs. experience in Heavy Construction. BSCE, P.E. Roads, bridges, dams, airports, utilities. Metropolitan New York only. PW-7639, Engineering News-Record.

Mechanic—Age 25—10 years experience on Allis Chalmers, Caterpillar, G.M. Diesel and Welding experience. PO Box 165, Bergen, N. Y.

Project-Manager Entire Supervision All branches of hvy const., estimates & methods, 22 yrs. exp. major projects U.S. & O.S. PW-7665, Engineering News-Record.

Construction Engineer B.S.C.E. 22 yrs. supervision, engineering, design, specifications-highways, airports, marine structures, p.o.l. installations, power plants, water and sewage works, including mechanical and electrical. Fluent French, Spanish and Italian. Age 56. Now in Far East. Available Feb. 1. Write P.O. Box 413, Huntington, New York.

Superintendent, NYPE, R.P.I. 1951, Tau Beta Pi, Age 36, Field experience supplemented by strong construction engineering background including home office experience in estimating, project engineering, subcontractor coordination and administration, and claims. Industrial, Commercial, Army, Navy and Church. Seeking position with unlimited opportunity. Resume available. PW-7745, Engineering News-Record.

Field Engineer—Layout Engineer or party chief. BSCE. 25 yrs. steam gen. plant, lock, dam. conc. and structural steel bldgs. and earth work. 57. PW-7740, Engineering News-Record.

Professional Civil Engineer, 36. A.B. and M.S. 11 years top experience with consultants in highways, structures, airports, and traffic. Achievements in design, development, reports, liaison, supervision and administration. Desire responsibility and potential. PW-7729, Engineering News-Record.

B.S.C.E. Age 32. Four years industrial construction and plant maintenance. Want position in engineering and supervision. PW-7735, Engineering News-Record.

Chief Estimator, Civil Engineer, age 43, 18 years field and estimating experience on heavy construction and buildings. Responsible for estimates on dams, power plants, locks, missile bases and buildings. Desire position with established firm located Midwest or West. Available immediately. PW-7725, Engineering News-Record.

Civil Engineer, BSCE, PE, age 39, graduate work in transportation engineering and other advanced subjects. Six years teaching; applied mechanics, surveying and engineering drawing. Three years in private practice; surveys, hydraulics and land development. Past three years with municipality; design and administrative experience; streets, small bridges, secondary highway and other projects. Will send resume on request. PW-7727, Engineering News-Record.

Male Steno, Typist, payrolls, taxes, welfare funds, job costs. 10 years construction experience. PW-7728, Engineering News-Record.

Sales Engineer — Mechanical Engineering graduate, over ten years experience managing, selling, designing, estimating, executing industrial insulation contracts. Desire to change firm going into new or related field. PW-7734, Engineering News-Record.

Female Admin. Asst., considerable exper. various phases of general construction field. All office skills—knowl. of plans, specs. & expedtg. Background in purch. includ. very hvy contact w/subs & suppliers. Excelnt. knowl. subcontracts. Famil w/biddg procedures, requisitions & submission shop dwgs., etc. Prefer NYC or vicinity office. PW-7722, Engineering News-Record.

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ENR-T4

Honesty in Construction

IT IS GRATIFYING that the Associated General Contractors, the nation's foremost contractor organization, has moved to police its segment of the construction industry against graft and corruption. At its mid-year meeting in New Orleans last week, AGC's Governing Board voted new investigative powers to its Committee on Ethics and Trade Practices (see p. 21).

In this move against corruption and in favor of honesty in construction, the elected leaders of AGC have followed up action initiated at their executive committee meeting last summer. Out of that meeting there came a letter to all members from President M. Clare Miller, deploring the black-eye constructors were getting from the rash of graft disclosures then so prominently and persistently in the news. That letter, as well as the news itself, had its effect on the contractor-leaders of AGC.

In these columns, the graft disclosures were called sickening. Wisely, the construction leaders who govern AGC are sickened, too, when proved corruption taints our industry, and suspected corruption goes uninvestigated and unproved. By their action they have not shied from a problem that should not—and indeed cannot—be swept under the rug.

William Klinger, past AGC president, is to be commended for his plea to the Board for official action against corruption. Carl M. Halvorson, Portland, Ore., contractor, deserves praise for coming up with the resolution to investigate complaints of corrupt practices. And AGC President Clare Miller must be credited for his leadership in this entire matter.

The effect of AGC's action remains to be seen, of course. But certainly it is an action that augurs well for curbing the minority whose dishonest practices reflect badly on the entire construction industry.

Roads and Urban Planning

FEDERAL AND STATE highway officials show an increasing awareness of urban problems and the importance of highway transportation as a force in shaping the modern city. Much good can come from this, for although urban highway problems are not new their scale and urgency are of new dimensions.

Urban highways were discussed by several of the keynote speakers at the AASHO convention in Denver (ENR Oct. 19, p. 25). During last week's ASCE convention (ENR Oct. 26, p. 21), Federal Highway Administrator Rex Whitton spelled out the role of the federal-state highway partnership in urban areas. Engineers, planners and economists discussed technical phases of urban highway planning, location, design and operation at both meetings. And, finally, the appointments of John Kohl as head of the new Office of Transportation in HHFA and Grant Mickle as Deputy Federal Highway Administrator further emphasize the concern of the federal government with urban transportation planning.

Amidst all this activity it is also heartening that recent public statements of key officials make it clear that highway agencies expect to continue to cooperate fully with all elements and agencies that have a stake in urban planning; and with responsible representatives of other forms of transportation as well.

Nor is it out of keeping with sensible planning policy to have Mr. Whitton and others reflect a determination to maintain the traditional strong position of the Bureau of Public Roads and the state highway departments in urban highway matters. As Mr. Whitton said last week, "I am all for planning, but there comes a time for action—a time when a final decision must be made by someone. And we of the Bureau of Public Roads—working with the state highway departments—expect to maintain our firm interest in major decisions affecting urban highway transportation."

Beset by attacks from various urban planners, stormed at by advocates of rail rapid transit and under fire from various interests that would welcome a share of the Highway Trust Fund, highway officials have closed ranks and defined their position in no uncertain terms. They have revealed the iron fist of financial control in the velvet glove of cooperative effort.

It is plain that the state highway departments—backed by the Bureau of Public Roads—intend to yield none of their prerogatives in the development of urban transportation systems. It is equally plain that they also accept the responsibility to make these systems conform to the over-all needs of our developing cities. The combination should spell progress.

Why Not Construction?

FASTER DEPRECIATION ALLOWANCES for tax purposes on machinery and equipment are promised by the federal government to give industries the incentive—and the cash—to invest in new, more efficient machines. But construction is far down the list of those slated to benefit. Why?

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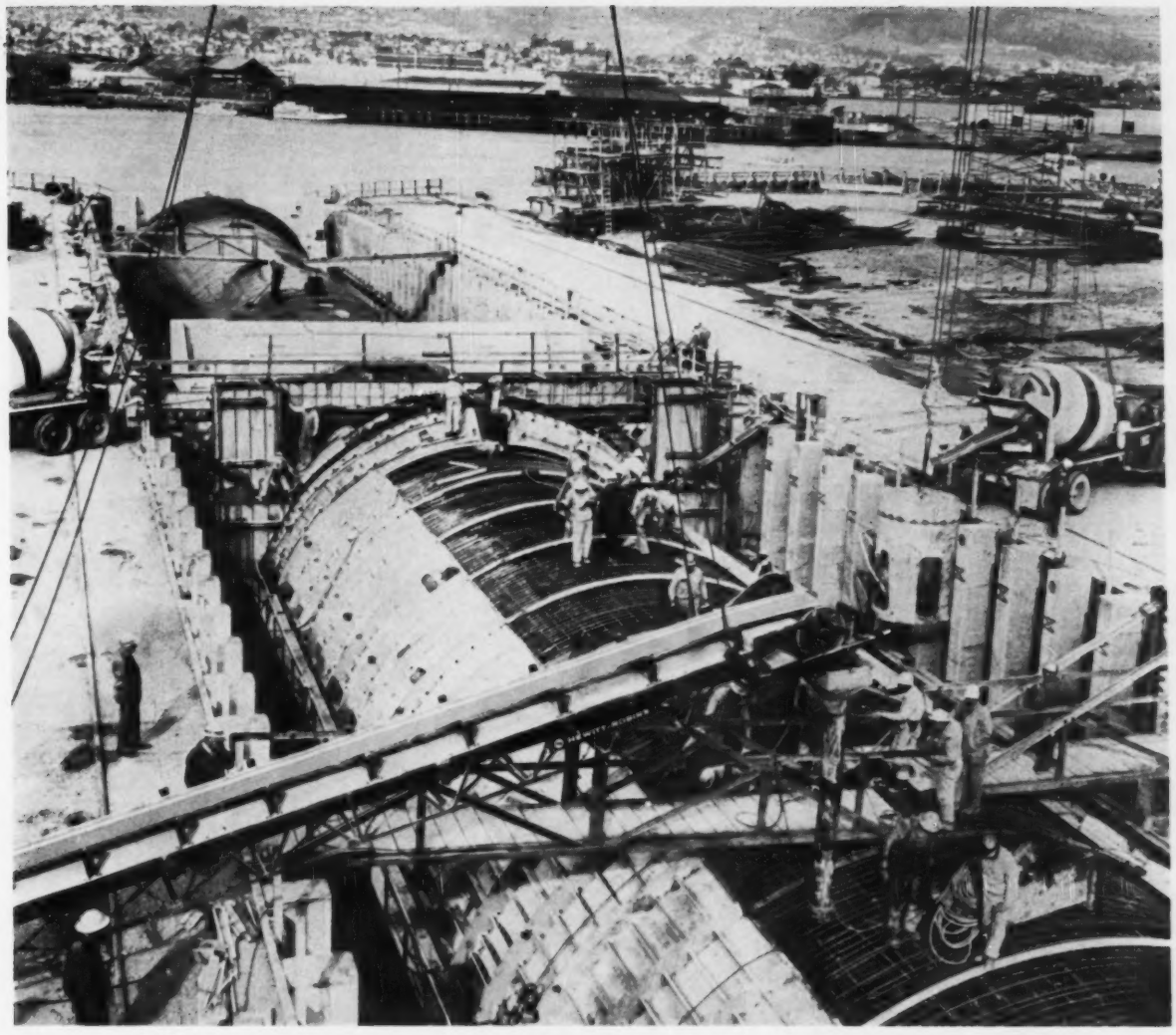
Construction contractors need fast depreciation allowances to stay in business. They need faster ones than they have now if they are going to keep ahead of obsolescence—and do efficient, lower cost work. Why not a tax break for construction, too?



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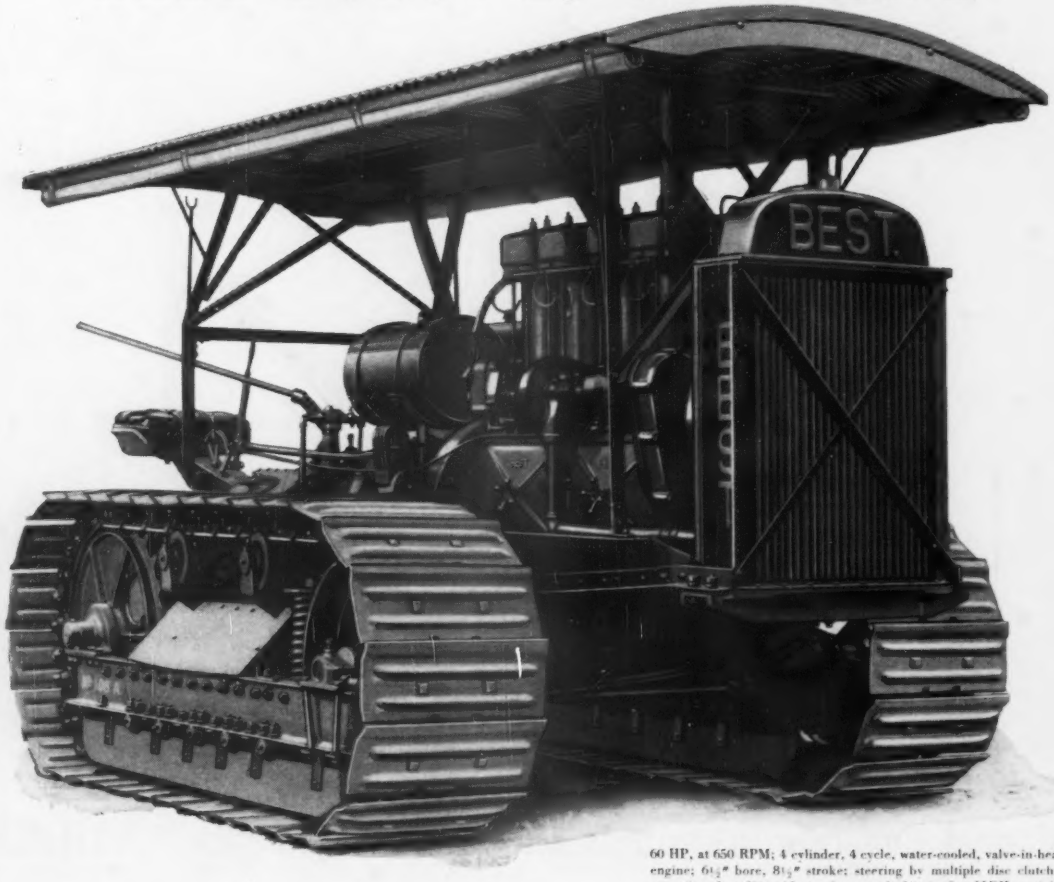

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